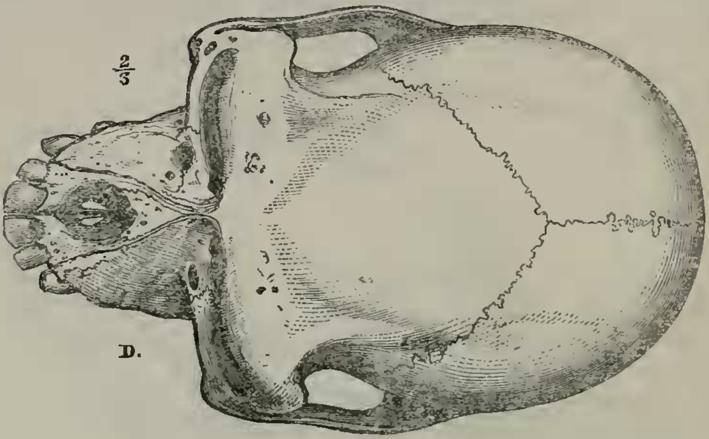
date lobes are small and considerably adherent. Upon the posterior or abdominal surface of the hepatic organ I found a number of hydatid sacs. These were to some extent free, being attached to the substance of the liver by short pedicles.

Fig. 5.



Skull, seen directly from above.

Of the male organs of generation nothing is known; but I presume the penis may resemble that of the short-tailed Japanese and Ursine Monkeys. In both of these there is a large-sized bone and other peculiarities, which I shall describe in a future communication.

In our female specimen the vagina, 1 inch long, had chiefly transverse rugæ, which were far from being prominent; the lips of the os tincæ project much into the vagina. The uterus, from the fundus to the os, is 2·2 inches long, but interiorly is no more than 0·4 inch in each diameter, the thick walls having the usual transverse and longitudinal rugosities. Urinary bladder globular, with a very short narrow neck.

June 18, 1872.

J. Gould, Esq., V.P., F.R.S., in the Chair.

The Secretary read the following report on the additions to the Society's Menagerie during the month of May, 1872:—

The total number of registered additions to the Society's Menagerie during the month of May 1872 was 154, of which 32 were by birth, 87 by presentation, 28 by purchase, 1 by exchange, and 6 were received on deposit. The total number of departures during the same period by death and removals was 88.

The most noticeable additions during the month of May were as follows:—

1. A fine female Spider Monkey, purchased of a Liverpool dealer, May 3rd, which appears to be the female of *Ateles variegatus*,

Wagner. Of this species we have once before received a single specimen (see P. Z. S. 1871, p. 223).

2. A female Douroucouli, purchased of the same dealer, May 7th, which, so far as I can tell from the examination of the living animal, belongs to the species recently described by me (*anteà*, p. 3) as *Nyctipithecus rufipes*.

3. Five Spotted-billed Ducks (*Anas pœcilorhyncha*), presented, May 16, by Mr. E. Buck, of the Indian Civil Service. We have had two males of this fine Duck in our Gardens for four years, but, although I have applied to many of our excellent Indian correspondents on the subject, have never previously succeeded in obtaining females. Mr. Buck's kind present has supplied us with specimens of this sex; so that we may hope to induce the species to breed with us.

4. Two male Argus Pheasants (*Argus giganteus*), presented to the Society by Mr. J. G. Fanshawe, F.Z.S., May 28th.

The first specimen of the Argus Pheasant received alive by the Society was that brought back by the late Mr. Hugh Cuming, on his return to this country from the Philippine Islands in June, 1840, which lived several years in the Gardens.

In October last year, however, Messrs. Smith, Fleming, and Co. deposited in the Society's care a pair of this magnificent bird, and a second pair in January last. Of these the two hens are still living in our aviaries; so that at the present time we have two pairs of Argus Pheasants in the Gardens.

Mr. Sclater exhibited a pair of Ceylonese birds which had been sent home to him for examination by Mr. W. Vincent Legge, R.A., F.Z.S., with the following description:—

"*Male*. Length $4\frac{3}{20}$″; tail 1·2″; wing 2·3″; tarsus ·5″; mid toe with claw ·5″, hind toe $\frac{5}{20}$″; bill to gape $\frac{9}{20}$″, at front nearly ·4″. Third primary longest, slightly longer only than second.

"*Descr.* Iris reddish; bill, upper mandible black, lower mandible lightish at the base; legs and feet blackish brown; entire head (except the chin and throat), hind neck, back, rump, and lesser wing-coverts dull steel-blue, palest on the rump, and with the bases of the feathers dark; quills blackish brown, the basal portion of inner webs, with the under wing-coverts, white; tertiaries, greater wing-coverts, and tail black, the former edged with the hue of the upper surface, the latter with the three outer feathers white towards the tip, the colour extending a little up the shaft on inner web, the next two with a small terminal white spot; chin, throat, and chest white, below which the under surface is saffron-yellow, paling at the vent; under tail-coverts white, edged pale yellow.

"*Female*. Length 4·1″; wing $2\frac{5}{20}$″; tail 1·1″. Bill slightly lighter in hue than ♂; legs, feet, and iris the same as ♂; head and hind neck faded bluish ashen, centres of feathers dark; back olivaceous brown; secondaries and wing-coverts brown, edged with olivaceous; quills lighter than in the male; sides of neck and chest ashy beneath, paler yellow than the male, mingled with grey on the flanks; tail brownish black.

"*Hab.* Forests of the low hills in the southern province, where it affects principally the creepers which entwine the trunks of the trees; resorts also to small branches of low trees.

"*Food.* Seeds and pollen from the flowers of creepers.

"*Note.* A faint monosyllablic chirp like 'tse.'"

Mr. Sclater remarked that these birds appeared to belong to a new species of the genus *Prionochilus*, for which, as Mr. Legge had proposed no name, Mr. Sclater suggested the specific term *vincens*, after one of the names of its discoverer. The discovery of a species of this Malayan group in Ceylon was quite new, and of great interest.

The following papers were read:—

1. On the Cranial Appendages and Wattles of the Horned Tragopan. By Dr. JAMES MURIE, F.L.S., F.G.S., &c.

[Received May 25, 1872.]

(Plates LX. & LXI.)

1. AS TO DISPLAY DURING COURTSHIP.

Most persons have witnessed and well know the grand display of the Turkey-Cock, when he struts majestically, with erect tail, blood-red throat, distended wattles and caruncula, the very essence of unbounded pride, anger, or lust, reaching its climax in a ludicrous gobble. The Pigeon, without obvious vascular turgidity or change of colour of the head and neck, woes his mate with dilated crop, rapidly utters an amatory note, and wheels himself about, finally rears up to full height, and rushes along, sweeping the ground with stiff outspread tail. Less known but equally characteristic are the habits of the Bustards, and especially the Australian species, which, during sexual excitement, develops an enormous wind-bag in its throat and neck. This it blows out even till almost reaching the ground, and, throwing back its head and forward its tail till they meet, the bloated bird stutters along, the very picture of stupid vanity *.

A sight which few have witnessed, yet almost a spectacle in its way as far as concerns the economy of birds, is the sexual advances of the male of the Horned Tragopan (*Ceriornis satyra*) during the breeding-season. This has been pictorially represented by two of our best zoological artists †, and lucidly described by more than one competent observer. I have myself, on more than one occasion, seen the male birds in the Society's Gardens momentarily and partially erect their horns; but never was fortunate in being present at what may be termed a full performance. Mr. Bartlett has assured me it was a perfect surprise to him, when first he saw the Tragopan suddenly flash up a

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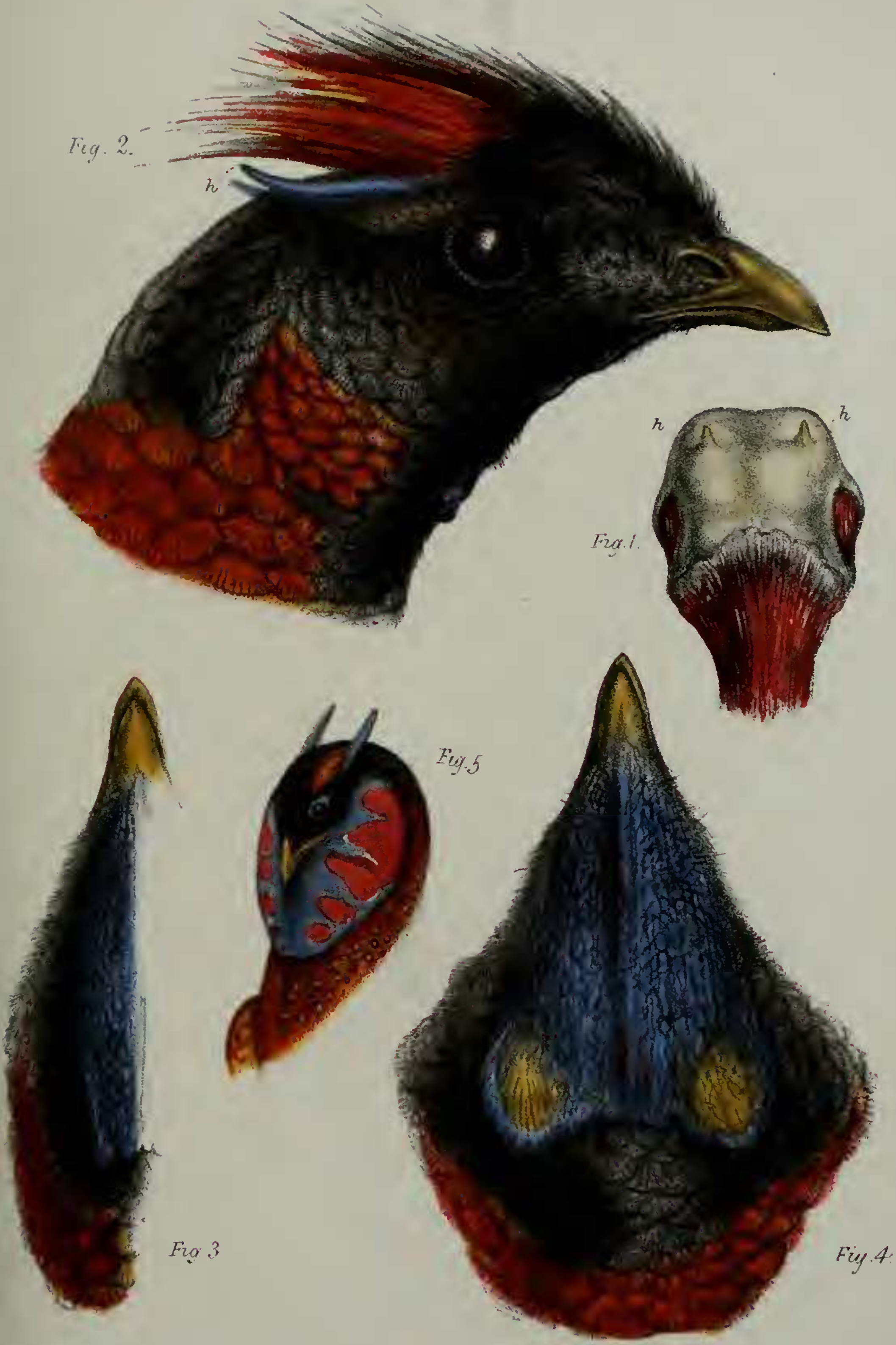
* *Vide* P. Z. S. 1868, pl. xxxvi.

† Wolf's 'Zoological Sketches,' 2nd ser. pl. xxxix., and Mr. T. W. Wood, pl. in 'Intellectual Observer,' Sept. 1863.

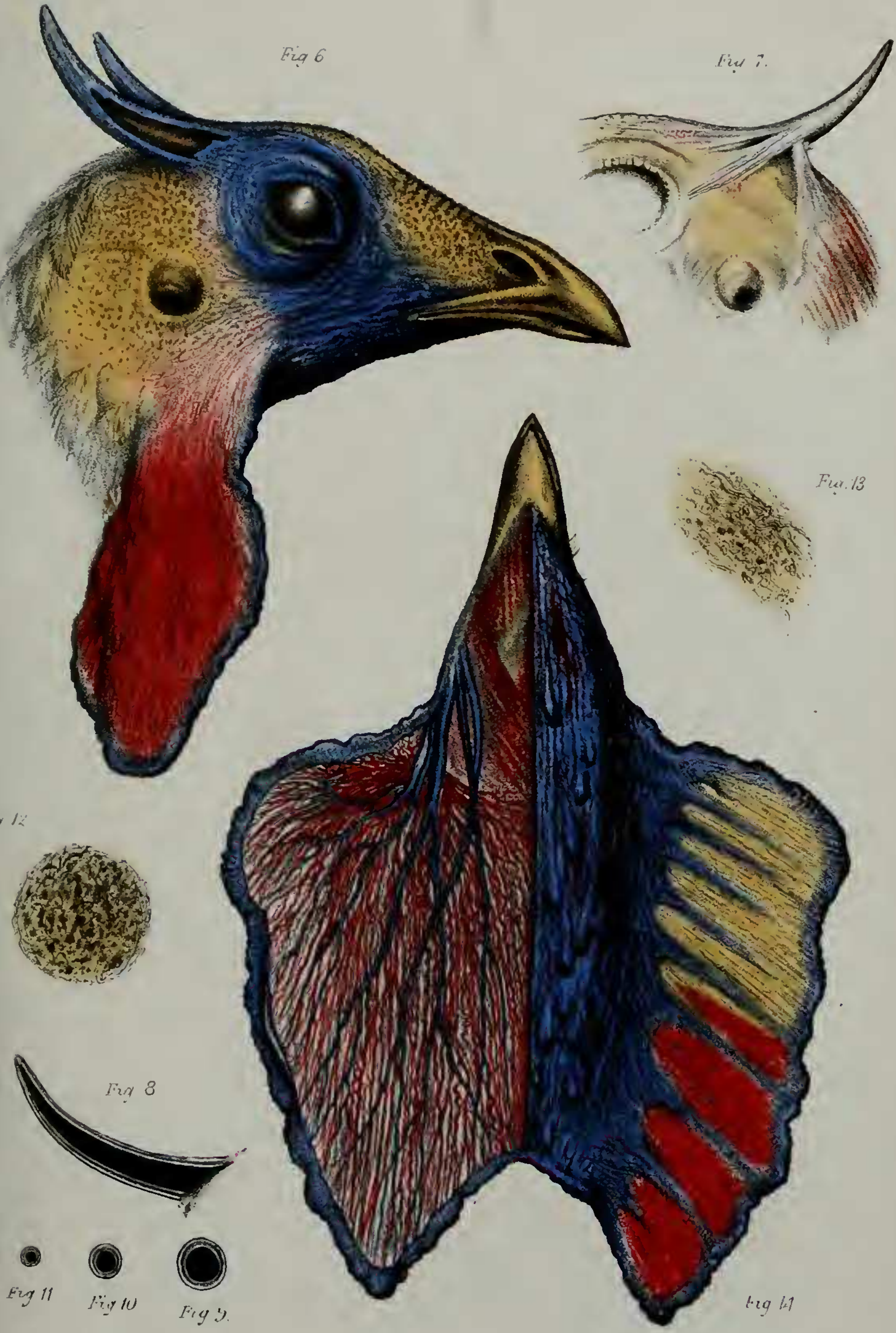
P. Z. S. 1872. PL. LX.



C. Berjeau lith.
M.&N. Hanhart imp.

STRUCTURE OF CERIORNIS SATYRA

BRITISH MUSEUM
NATURAL HISTORY



C Berjeau lith.
M & N Hanhart imp

STRUCTURE OF CERIORNIS SATYRA

BRITISH MUSEUM
NATURAL HISTORY

a pair of blue horns and dash out a beard-like apron of bright scarlet, suggestive of a gnome or the evil one.

The male is said to "show off" in three modes * :—

1st. He stalks in front of the female; then crouching with tail bent down, the head and neck move up and down with vibratory jerks; the wings have a flapping motion, bringing the red patch into view; the horns are raised, and the great scarlet wattle unfolds with startling effect, while the bird draws himself up to full height as an object of splendour.

2nd. On some occasions he simply erects all his feathers, and elevates one shoulder without showing his head-dress.

3rd. Standing boldly on a perch he tosses the head, when the horns and wattles appear for a few moments.

I may add a fourth, viz. erection of the horns without display of the wattle.

2. Outward Head-dress in the Two Sexes.

It is, however, to the structure and physiology of the apparatus that I invite attention. In a study of the phenomena several specimens, and in different stages of development, have been investigated by me.

My first example was a young female, wherein externally there was only a nipple-like process, representing the so-called horn, and little or no development of wattle. On removal of the skin of the head, two small processes, arising from the parietals or postfrontals, were apparent, one on either side. These consisted only of tough, elastic, fibrous material, firmly adherent to the bone, and without any special vascularity around.

I come now to speak of the older birds, and for the sake of precision give in detail a description of two. One was bred in the Gardens in June 1864, and died of tubercle of the liver in May 1867. This adult male was in good plumage, but not so brilliant in hue as the newly imported and breeding-specimens from India. The drawings (Plate LX.), sketched from the fresh body, bring out the important points worthy of consideration.

The horns exteriorly are of a beautiful azure-blue colour, soft, yet tough and elastic to the touch. Each free portion measures 0·7 inch in length. Pressure of the finger upon the occipito-frontalis directs the horns upwards almost to the perpendicular; but when at rest or in their usual position they lie slantingly backwards. Ordinarily they are hidden by the feathers, but when erect pout out between the lateral black feathers and the gorgeous red ones of the vertex of the cranium.

The superficial blue skin structure, continuous with the horn covering, runs forwards upon the upper border of the orbit, and encircles the latter, where it is partially covered by short dark-coloured feathers. It extends more strongly marked the whole length of the lower mandible from the angle forwards. It is bare, and prominently

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* Bartlett, "Remarks on the Horned Tragopans," Intellectual Observer, Sept. 1863. where he refers to Mr. Wood's notes &c.

seen at the angle, but anteriorly is partly hidden by the short black feathers.

Beneath and between the mandibular rami the skin is very loose, baggy, and easily moved. The numerous cutaneous folds are chiefly longitudinal; but the general appearance is a sort of wrinkled puckering. The brilliant smalt-blue at this spot is modified by the short black feathers, which latter are pretty freely distributed. In this the contracted state an elevated mesial linear and laterally compressed ridge is very noticeable posteriorly. This hangs as a sort of free lappet, and is of a most brilliant shade of blue. On either side of this central lappet the rich blue skin of the gular region ends in four or five long sharp-pointed digital lines; these increase in length from within outwards. The outside one of all is very broad and remarkably finger-shaped. Its minor posterior free extremity bends towards the median lappet, which, indeed, it joins by a transverse semilunar narrow ridge, behind which the feathering commences. The intervals between the digitations are bare, pale, and flesh-coloured, but at certain seasons assume a bright red hue.

The pair of loose dependent folds or flaps, which in reality constitute the single dilatable wattle, in ordinary conditions are drawn towards each other, so that the bare blue-coloured skin is in a great measure hidden. In the pride of lust, however, these flaps increase in size, open out or dilate, and there is displayed a gorgeous blue and red gular region and wattles.

3. Cranial Dissection of a Male in Season.

The body of the above having been disposed of for the purpose of being stuffed, I had to postpone further anatomical investigation. But another specimen at a later period yielded me a dissection of the parts. This Tragopan was in splendid order, and his wattles and horns most ample, he having been accidentally killed by concussion against the enclosure through fright in the pairing-season; for Mr. Bartlett believes these birds monogamous *. Circumstances did not permit my injecting the head and making a preparation, which I could have wished to have done. But to improve by the occasion I made dissections, the result of which I proceed to describe. The sketches supply deficiencies in the foregoing account, and show the respective areas of blue and red, with horns and wattles of full dimensions.

The blue colour, it is to be observed, is permanent, and not due to temporary venous turgescence, while the gorgeous scarlet is evanescent, and the result of flow of blood to the parts. I accentuate these facts, because I myself at first mistook the import of the difference of hue. Until instituting a thorough examination I regarded the horns as vasculo-erectile organs, which I am now prepared to show is not the case.

The whole of the area on the cheeks, supraorbital parts, horns, gular region, cross lines, and border of the wattle, which is coloured blue, is simply a tinted pellicle of the dermal covering. By ordinary

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* See remarks, p. 70, in paper already quoted.

manipulation it can be easily removed with the dermis, as is shown in part, figs. 6, 7, & 14. In this respect it is analogous to the gorgeous head- and throat-covering of the Cassowary, and to the varied dermal coloration of the cheeks and wattles of many other birds. Microscopic examination shows that the colour of the said parts in *Ceriornis* is caused, as in the dark races of man, by a substratum of pigment. The large pigment-cells, however, in the Tragopan, are of a deep blue; and according as they are in mass or more sparsely aggregated, so is the intensity of the shade. On the throat, and especially the broad strip of the wattle, the general outward colour is dark indigo, much deeper even in some parts by the addition of the black filiform feathers; but here and there are small oval spots of a brilliant smalt, which shine like spangles among the feathering.

(a) *Pseudo-horns, and how erected.*

The cranial appendages or horns have superficially a casing or layer of coloured skin precisely similar in composition to that I have above described. This outer sheath is adherent, but loosely attached to the parts beneath—and on maceration is easily removed *en masse*, along with the dermal tissues of the forehead and face. Beneath it there is a delicate and transparent enveloping layer of fibrous and elastic tissue, intermingled with unstriped muscular bundles, and a trace of the striped variety at the root—besides what appeared to me as vessels, and probably nerve-fibres.

Lastly, and deepest, is the long, conical, and pliant core, or horn proper. This is solid, and composed throughout of firm elastic and condensed fibro-cellular tissue, almost rivalling cartilage in density. Externally it is nearly black in colour, but on cross-section is seen to be a trifle lighter centrally. A thin transverse slice about the lower third is translucent, and, held up to the light, exhibits a grey interior, gradating outwards to a narrow rim of deeper hue. The blackish colour, however, increases higher up. Towards the upper third there is a small, more or less oval, bluish-white circumscribed spot, situate rather to one side of the centre, around which, from a sombre brownish black, the tint merges into the deeper black. Quite at the tip the light interior, or medullary-looking layer, is barely perceptible. Under the microscope, with a low power, the exterior fibres are observed to be predominantly circular in direction, those within chiefly longitudinal and oblique. The deep colour results from a meshwork of pigment-spots distributed everywhere, but are in greatest abundance at what may be termed the cortical layer. Each pseudo-horn springs direct from the cranial bones, at a roughened eminence between the junction of the postfrontal and parietal. The base is pale-coloured, and in all respects analogous to thickened periosteum. At this part in our third specimen the diameter was 0·2 inch, tapering upwards to a terminal point. Entire length 1 inch.

As regards the mode of erection, this is evidently a muscular and voluntary act, produced by the contraction and tension of a thin sheet of muscular and aponeurotic fibres, derived from the pericranial layer. At will, and during states of excitement, the bird has merely to move the superciliary region forwards, as in the act of scowling, and possibly lower the mandible a little, when the horn perforce must be bent forwards, and become more or less erect according to traction. Undoubtedly there is no vascular erection, as in the case of the wattle, presently to be mentioned.

I know of no other such remarkable solid cranial appendage moveable at will among the bird tribe, unless it be that of the Cotinga, (*Chasmorhynchus*) and Horned Screamer (*Palamedea*). But in my examination of *Chasmorhynchus niveus* the caruncle seemed soft and spongy compared with the foregoing, suggesting the idea of vascular erection, rather than a mere muscular act.

Instead of a double whip-like comb, which may be the true homologue, we may indeed liken the said head-organs in the Tragopan to horns ; for although they have not the solidity of horn as in Ruminants, they nevertheless present an intimate structure which suggests, without being strictly, a horny constitution.

(b) *Intimate Structure of the Wattle.*

The wattle of *Ceriornis satyra* is of a totally different nature, and in most respects agrees with the same organ in other birds,—its brilliant colour, magnitude, and mobility being matters rather of degree than kind. Like the horns, it is fully developed only in the adult male. As in the case of the testes in some birds, it is periodically enlarged during the breeding-season, and then, in fact, only is in perfection.

It is simply a duplication of the skin of the throat, containing, like a single papilla or a larger fold, nerves, blood-vessels, retractile and connective tissue. These increase in dimensions and complexity as the bird arrives at maturity, and under the above-mentioned conditions.

In the male Jungle-fowl, as in the domestic breed of poultry, the comb and the wattles are each a fleshy fibro-vascular organ,—the former always firm and more or less erect, the latter at all times dependent, though on occasions more fully distended with blood. In the case of the Common Turkey-Cock the wattles and caruncula dangle as loose appendages until moments of excitement, when the vascular flow towards them produces the tumid phenomena. The Tragopan's wattle differs from the preceding, inasmuch as it is thin, more membranous, and contains a double sheet of either unstriped muscular fibre or fibro-elastic tissue. The latter endows it with that wonderful retractile capacity, withdraws it out of sight, and retains it folded beneath the mandible, under ordinary circumstances, or after it has been fully expanded.

The vessels and nerves occupy chiefly the centre of the wattle. In front and behind these are the thin transparent layers of the elastic fibres and areolar tissue generally. These, again, on its two sides, superficial and deep, are covered by the upper layers of the cutis and epidermis, the blue-coloured portions coming in with the former. The vessels form a true rete mirabile, and run in nearly straight parallel lines from the root to the free extremity (see Plate LXI. fig. 14). As far as my dissection warrants me in speaking, for I labour under the disadvantage of the specimen not being injected, the arterial supply is derived from the superior cervical plexus or division of the carotid, which may be taken as such on its emergence from between the muscles of the neck. The veins are fewer, superficial, and anteriorly situate. They run forwards towards the angle of the jaw, and communicate with the jugular.

The physiology of the deflection and retraction of the wattle in the Horned Pheasant is identical with that of other vascular erectile organs. Usually the passive contraction of the fibre and elastic membrane is sufficient to retain the flaccid fold in place under the throat. During the breeding-season, however, fibre, vessels, and skin develop apace, or seem concomitantly and temporarily to increase, doubtless by a stimulus of nervous force and respective vascularity. When the period of excitement ensues, a rapid rush of blood is sent to the parts both of the gular region and head generally. The innumerable arterial channels of the rete mirabile are quickly filled; and powerful contraction of the neck-muscles follows, as may be inferred from the jerking movements of the head, mentioned in the first section. The blood thus poured into the wattle, *per saltum*, throws down the wattle, and, from the thinness and transparency of its walls, produces the magnificent scarlet tint spoken of by observers. Erection is maintained for a shorter or longer period, according as the muscles exert their pressure and prevent the return of the flow of blood. The veins, besides, being fewer in number, delay sanguineous return. The excitement having passed, relaxation follows, and the blood slacks to its normal standard. Meantime, by the contraction of the fibres within the wattle, it resumes its former place almost without an effort.

4. RÉSUMÉ OF THE MORE IMPORTANT POINTS.

1. The male of the Tragopan shows characteristic traits during the breeding-season, differing in several ways from allied forms—but principally noteworthy on account of elevating a pair of cranial appendages, and displaying momentarily a gorgeous membranous wattle.

2. In the female rudimentary horns, even in the young, are found.

3. The so-called horns, as likewise the wattle, *pari passu*, increase with age, and are only fully developed in the adult male at the breeding-season.

4. Even in the adult male the wattle is usually folded beneath the jaw, and almost hidden by the feathering.

5. Pseudo-horns, supraorbital region, cheek, portion of lower jaw, throat, and wattle are more or less clad with a bright blue skin, not due to venous turgescence or congestion.

6. The said coloration results from a pigment-layer and free granules situate in the dermis.

7. That which properly constitutes the horn is a black, solid, yet

exceedingly lithe conical body, which springs from the postfrontal bone. It is composed of densely packed fibro-cellular tissue, with a great quantity of pigment distributed throughout.

8. Growth of the pseudo-horn is apical; and elevation is through a musculo-aponeurotic act, not by vasculo-erectile tissue.

9. Deflection and exposure of the wattle follows from its arterial injection, being provided with a rete mirabile whose vessels run chiefly longitudinal and parallel. The occasional rich red hue is a sanguineous effect.

10. Retraction of the wattle is partially an involuntary act, the sequence of its containing abundance of fibro-elastic tissue and unstriped muscular fibre.

EXPLANATION OF THE PLATES.

Plate LX.

Fig. 1. A view of the dissected occiput and back of the neck of a young female Horned Tragopan, showing the nuchal and temporal muscles, above which are the two rudimentary horns, *h*, *h* *.

2. Profile of an adult ♂ *Ceriornis satyra*, Linn., the erectile horns, *h*, being partially exposed by the feathery crest being slightly raised.

3. An under view of the same head, with the wattle as it appears when the adjoining marginal feathering is tucked out a little way.

4. Exhibits a second stage of the mandibular region, with a full view of the contracted wattle, as the cheek- and throat-feathers are thrust widely out.

All the above figures are of natural size, and drawn from the specimen immediately after death.

5. Reduced sketch of the full facial display of the male bird, after Mr. T. W. Wood, in 'Int. Obs.' as quoted, *anteà*, p. 730.

Plate LXI.

Fig. 6. Side view of the head of the second male spoken of in the text. The feathers are partly removed; the blue skin cut open on one side of the pseudo-horn brings into view the dark core beneath. Wattle seen laterally and from behind, as if injected.

7. Dissection of the posterior half of the side of the head, the skin &c. being cut away, and exposing the pseudo-horn and tissues connected therewith.

8. A mesial longitudinal section of the horn, and its blue investment of skin.

9. A transverse section of the same near its root.

10. Another cross section from about the middle.

11. A third slice, cut transversely near the tip of the horn.

12. A magnified view of the core of the pseudo-horn cut horizontally. It shows the meshwork of pigment-material and other substance of which it is composed.

13. A small portion of the elastic fibro-cellular tissue, with its pigmentary granules teased out. Shown as a microscopic preparation under a moderate power.

14. The under surface of the mandible and throat of the same ♂ Tragopan, displaying the outspread membrano-vascular wattle. On the left moiety the skin is intact, and one portion shows the natural wrinkled condition without injection; the other coloured, as if engorged with blood. On the right side of the figure the anterior layer of skin has been dissected off to display the rete mirabile when injected.

Excepting nos. 12 and 13, the figures in this Plate are represented of nearly natural dimensions.

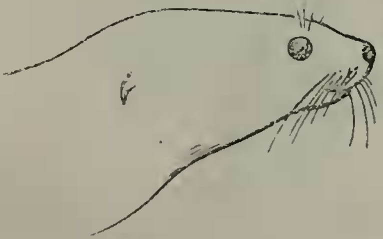
2. Description of the younger Skull of Steller's Sea-bear (*Eumetopias stelleri*). By Dr. J. E. Gray, F.R.S. &c.

[Received June 3, 1872.]

The skull here described was obtained by Mr. Gerrard, jun., along with some skulls of animals from Japan (as, for example, the skull of the Japanese Dog); and he has no doubt that the whole collection was made in Japan. If this theory is correct, it shows that *Eumetopias stelleri* ranges from Behring's Straits to Japan.

The genus *Eumetopias* has the hinder upper grinder directed backwards, especially at the tip. This seems to be common to the Sea-bears that have the hinder upper grinder placed far back in the palate; for it is common to this genus and *Gypsophoca*. This does not seem to be the case in the skull figured by Dr. Peters under the name of *Arctophoca philippii*, which is supposed to be allied to it. I have not seen this latter skull; but in a former paper I have suggested that it may have lost its hinder pair of grinders; for Philippi has lately figured a very similar skull with a pair of grinders placed behind those figured by Dr. Peters, showing that the genus *Arctophoca* was described from an imperfect skull of *Gypsophoca*.

Fig. 1.

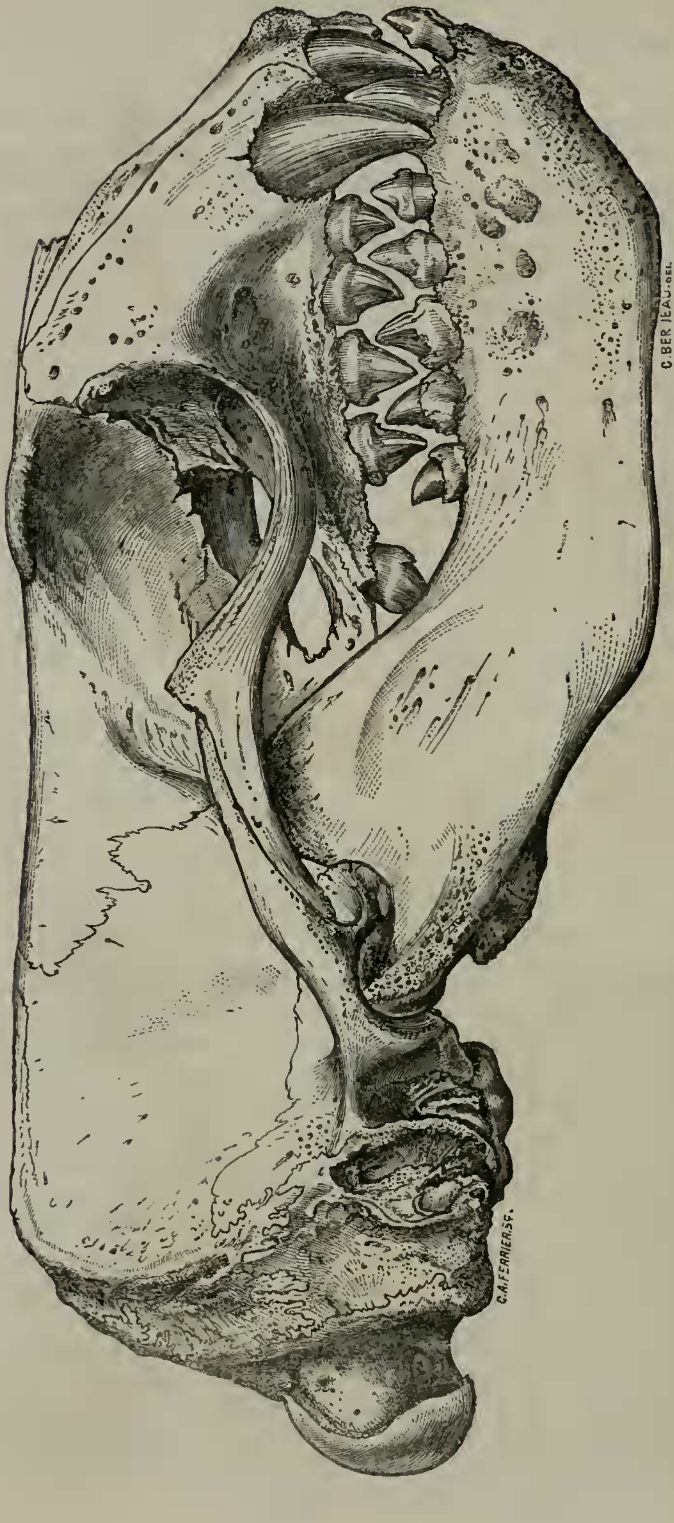


Eumetopias stelleri.

Sketch of head, to show the position of the ears.

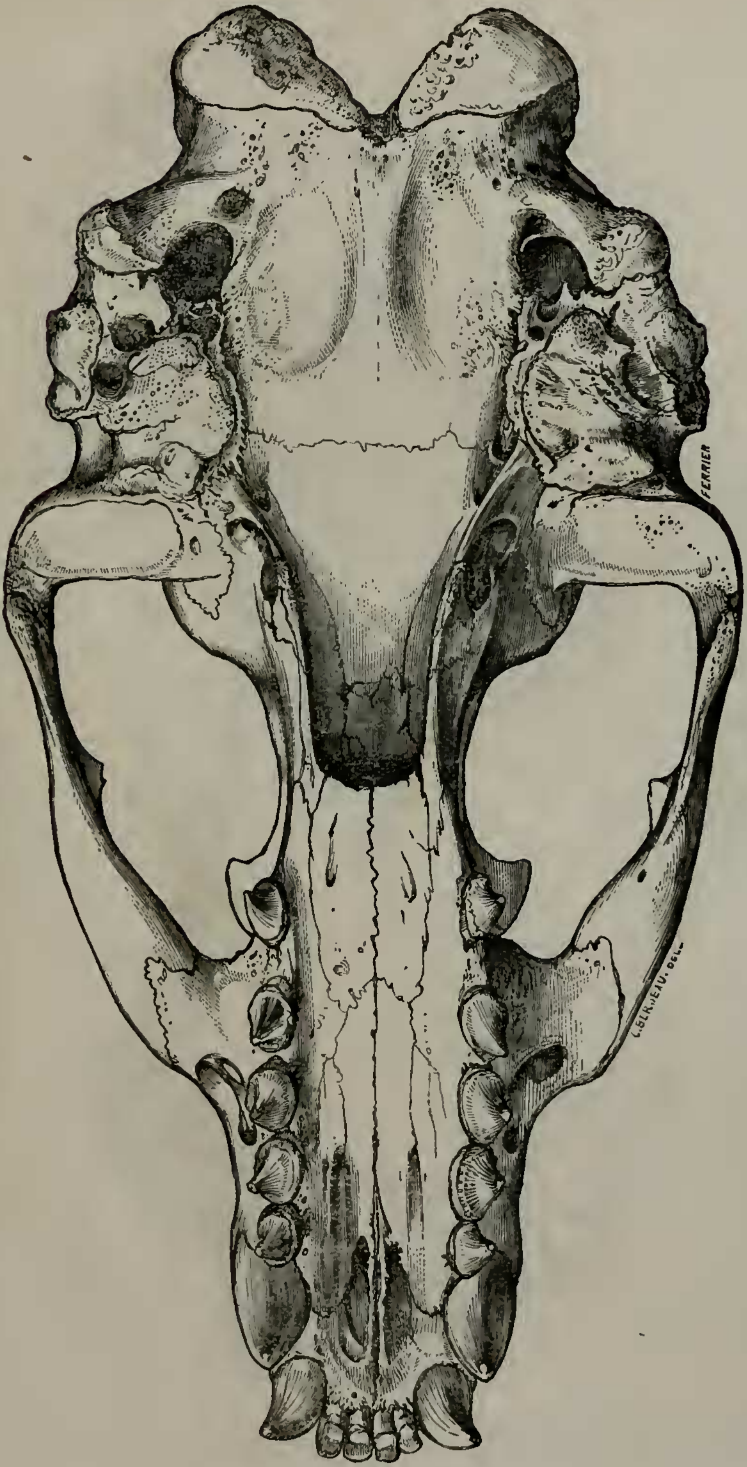
The adult skull of *Eumetopias stelleri* in the Paris Museum was figured by Pander and D'Alton, but very badly, under the name of *Phoca jubata*. This skull had been most unaccountably overlooked by Nilsson and others, until Dr. Peters discovered it. The specimen we received from Mr. Gurney from Monterey was figured by me under the name of *Arctocephalus monteriensis* in the P. Z. S. 1859, pl. 72; and at the same time I described the skull of a very young specimen under the name of *Arctocephalus californianus*, which is now in the British Museum. Allen, in his paper on the Eared Seals in the Museum of Comparative Anatomy, has given a view of the underside and posterior end of the skull of a very old and of a middle-aged male Seal, and some other details; but I am not aware that a specimen in the medium stage between the adult and very young state has ever been described or figured; so that the receipt of the skull of a specimen in that state, showing the peculiarities that occur during the growth of the species, is as interesting as the description of a new species; and to illustrate these differences I have figured the sides

Fig. 2.



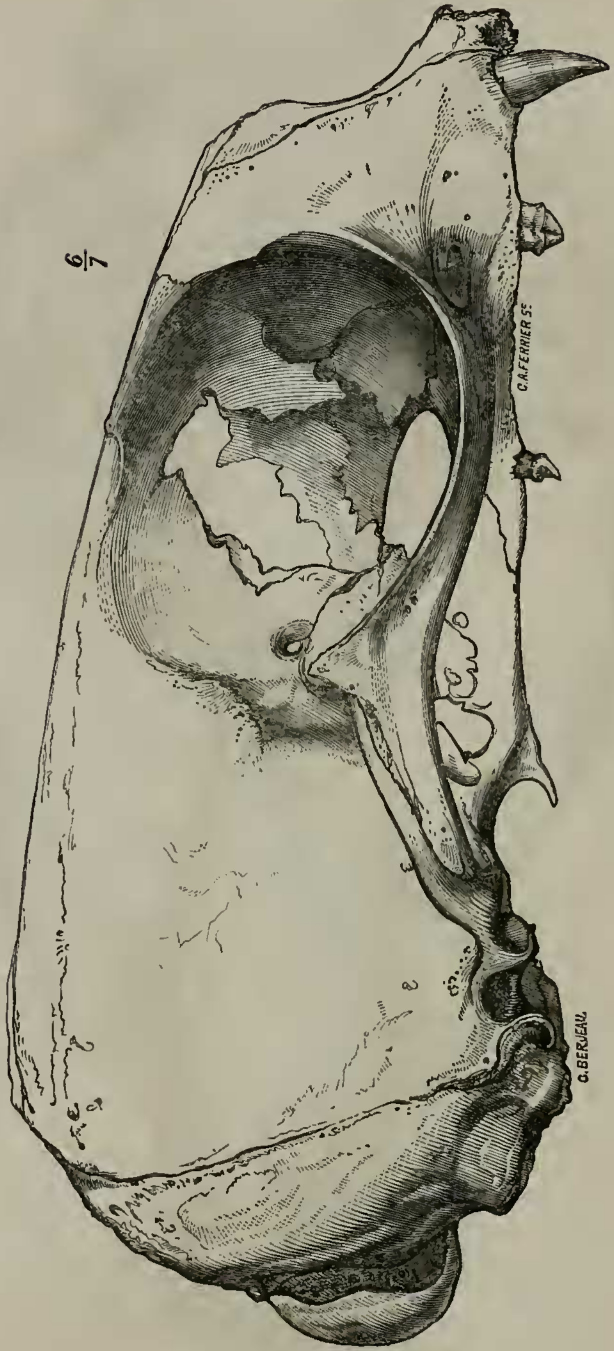
Side view of skull of half-grown *Eumetopias stelleri*, from Japan. B.M.

Fig. 3.



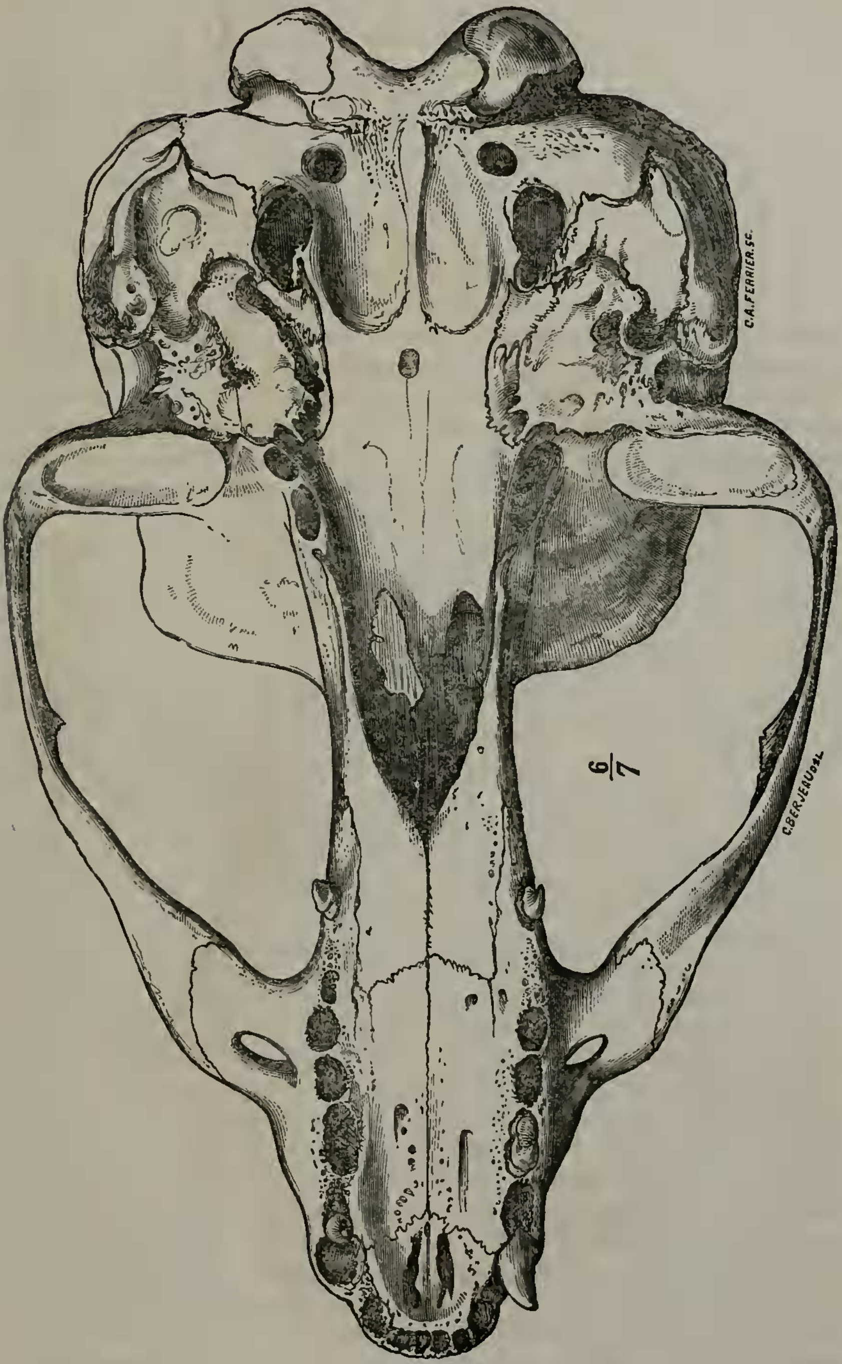
Lower surface of skull of half-grown *Eumetopias stelleri*, from Japan. B.M.

Fig. 4.



Side view of skull of very young *Eumetopias stelleri*, from California. B.M

Fig. 5.



Lower surface of skull of very young *Eumetopias stelleri*, from California. B.M.

and lower surfaces of the middle-aged Japanese and of the very young Californian skulls (see figs. 2, 3, 4, 5, pp. 738–741), confirmed by Mr. Allen's figures of the North-Pacific species. Hitherto the position of the teeth compared with other parts of the skull has been considered very little liable to vary. Indeed, in all the known species, it has been supposed that the teeth after the first change, which occurs a very short time after birth, retain their relative position during the whole of their life. This has been proved by the examination of skulls of different species and ages; and the chief difference between the two skulls in the British Museum from Monterey and Japan (?) is that the adult Monterey skull is very heavy, and very much wider (that is to say, that the width between the zygomatic arches is the same as the length from the front upper cutting-teeth to the tubercle on the hinder part of the edge of the hinder nasal opening), the palate has much greater width and is rather contracted behind, and there is a very great space between the fourth and fifth upper grinders. The hinder grinder has a small crown and a large base, consisting of two very distinct roots, the front of which is much the largest. The grinders are much more cylindrical and have more regularly conical crowns than the younger specimen.

The lower jaw is very strong and heavy, rather abruptly truncated in front, and is as high under the fifth as under the first grinder; that is to say, it is not dilated in front, but the same height the whole length. (See P. Z. S. 1859, pl. 72.)

The younger skull said to have come from Japan (figs. 2, 3) is much longer and narrower, and is peculiar for having two very large occipital condyles, which are as wide as half the width of the skull at the condyles of the lower jaw, very unlike the size of the condyles in the two nearly adult jaws figured by Mr. Allen; unfortunately this part is deficient in the adult skull from Monterey in the British Museum. The skull is light and thin, and the sutures are still visible. The width at the condyles of the lower jaw is considerably less than the length from the front cutting-teeth to the tubercles on the side of the hinder nasal opening. The grinders have elongated conical rather compressed crowns, and a distinct basal collaret; the fifth hinder one is more compressed, and only separated from the fourth by a space about as wide as the fifth tooth. This tooth has a compressed and very indistinctly divided base, very unlike the two diverging and unequal lobes of the adult skull. The lower jaw is much dilated in front, and very obliquely truncated and swollen, having a very different appearance from that of the adult animal. The grinders are rather elongate-conical, without any or only a slight lobe on the front of the collaret, the fifth or hinder grinder, with a smaller more compressed crown, having a lobe on the front and hinder edge. The canines are large, rather compressed, with a sharp cutting-edge on the hinder side; the outer upper cutting-teeth are large, nearly half the size of the canines; the crown of the grinders is elongate-conical, all these parts being much more acute and compressed than in the adult skull, the teeth becoming thicker and more cylindrical by age.

In the fœtal skull from California (figs. 4, 5) the hind upper grinder is at a considerable distance from the others, as in the very old skull in the Museum and the two adult skulls figured by Mr. Allen. The closer position of the last grinder in the younger skull from Japan may either be an individual malformation, or may be a peculiarity of the Japan Seal; this is a question that must be left for future determination.

The middle-sized skull from Japan is 11 inches long, and 5½ inches broad at the condyles of the jaws; lower jaw 7½ inches long. The skull of the very young is 7½ inches long, and 4½ inches broad.

3. Additional Notes on *Arctocephalus cinereus* and on *Gypsophoca*. By Dr. J. E. Gray, F.R.S. &c.

[Received June 10, 1872.]

I have just (June 10th, 1872) received a proof-plate that is to form part of the forthcoming volume of the 'Transactions of the New-Zealand Institute,' vol. iv. plate 12.

The Plate represents two skulls, and is inscribed "*Arctocephalus cinereus*, Gray: fig. 1, adult, Milford Sound; fig. 2, young, Auckland Island."

Dr. Hector in this case has made the same mistake as I did in the 'Catalogue of the Seals and Whales,' when I described the skull of Mr. Macgillivray's Seal from North Australia as the *Otaria cinerea* of Quoy and Gaimard; but then I had never seen the real skull of the *Arctophoca cinerea*.

There is no doubt that the skulls Dr. Hector has figured are very distinct from each other, for the reasons given in my former paper. That which is figured as the adult *Arctocephalus cinereus* from Milford Sound is a true *Arctocephalus*, and apparently the same as *O. cinerea*. The young *Arctocephalus cinereus* of Hector, from Auckland Island, is evidently a *Gypsophoca* and very similar to the skull which we received from North Australia, near the tropics. The skull figured by Dr. Hector wants the last pair of upper grinders; but the cavities for the reception of their roots are well marked. The only difference that I see between this skull and the skull in the Museum from North Australia is the small size of the foramina on the side of the ossa petrosa. This adds to the difficulty about the geographical distribution of this genus. The specimen and skull in the Museum come from North Australia, near the tropics; Dr. Hector's skull from the Auckland Islands near the Antarctic circle; and Dr. Philippi's skull from the west coast of S. America, as also does Dr. Peters's *Arctophoca*, if we consider that the skull which he described had probably lost its last upper grinder, and belongs to this genus.

4. Notes on Corals from the South and Antarctic Seas.
By Dr. J. E. Gray, F.R.S. &c.

[Received June 6, 1872.]

(Plates LXII.-LXIV.)

In 1846 Captain Sir James Ross sent to me four very detailed and accurate drawings of corals obtained in the southern part of the South Seas, informing me that I might figure them (after I had received descriptions of them from Mr. Charles Stokes) in the 'Voyage of the Erebus and Terror.' Three of the four drawings are named, in pencil, *Melitea australis*, n. s., *Primnoa rossii*, n. s., and *Madrepora fissurata*, n. s., most probably the manuscript names that Mr. Stokes intended to give them. I do not recognize that they are in his handwriting; I think the writing is that of my dear friend, James de Carle Sowerby; and I see one of the drawings is marked "J. S." I suppose Mr. Stokes had the specimens; and probably they were dispersed at his death, and are thus lost to science, as many specimens are that are collected during voyages of discovery made at the expense of Government, when given to private individuals, as is so frequently done. Captain Sir J. Ross and Mr. Stokes are both dead, and there is no hope of receiving any more particulars from them; and I feel that it is desirable that corals from such an out-of-the-way and rarely visited region should not be lost to science, and that I do not at all interfere with their wishes in laying them before the Society, and in having the drawings published after this long period of time. The other drawing represents a species of *Tubulipora*; but it does not bear any name, and, like the other three, is entirely destitute of any special habitat.

MOPSELLA AUSTRALIS. (Plate LXII. figs. 7–9, and Plate LXIII. figs. 10–12.)

Coral deep red, forming an expanded plane irregularly furcately branched; stem more or less sinuous; branches very unequal and acute at the tip; axis dark red-brown, longitudinally striated; articulations scarcely prominent, pale reddish; bark smooth, dark red; polypes whitish, chiefly on the sides of the branches, surrounded by a prominent ring of the bark, which is slightly sinuated on the edge.

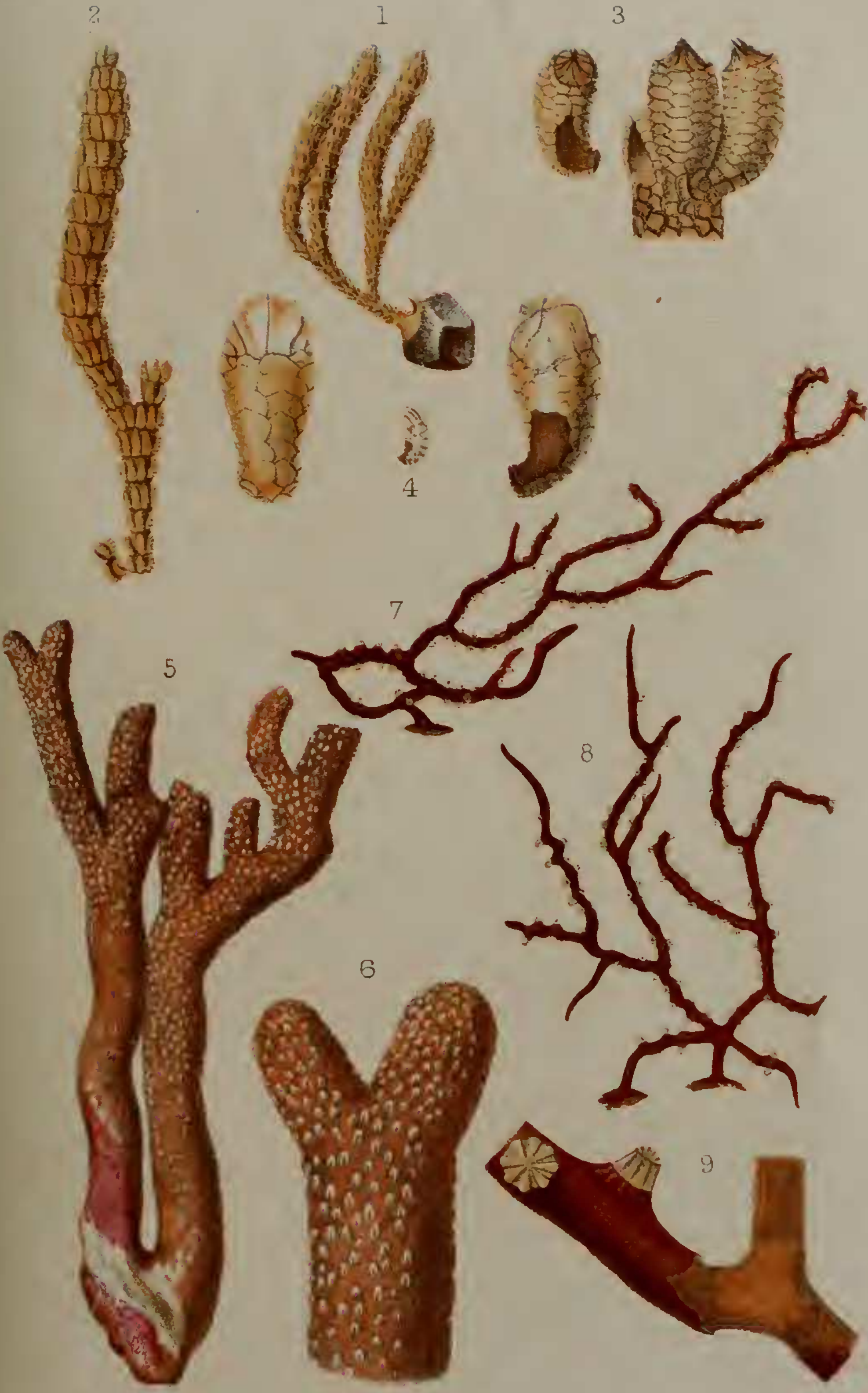
Melitea australis, n. s., Stokes, ? MS.

Hab. Antarctic Ocean (*Ross*).

The branches of the coral seem to have the faculty of forming an expanded disk, acting as a root whenever they touch a rock or other marine body.

FANNYELLA.

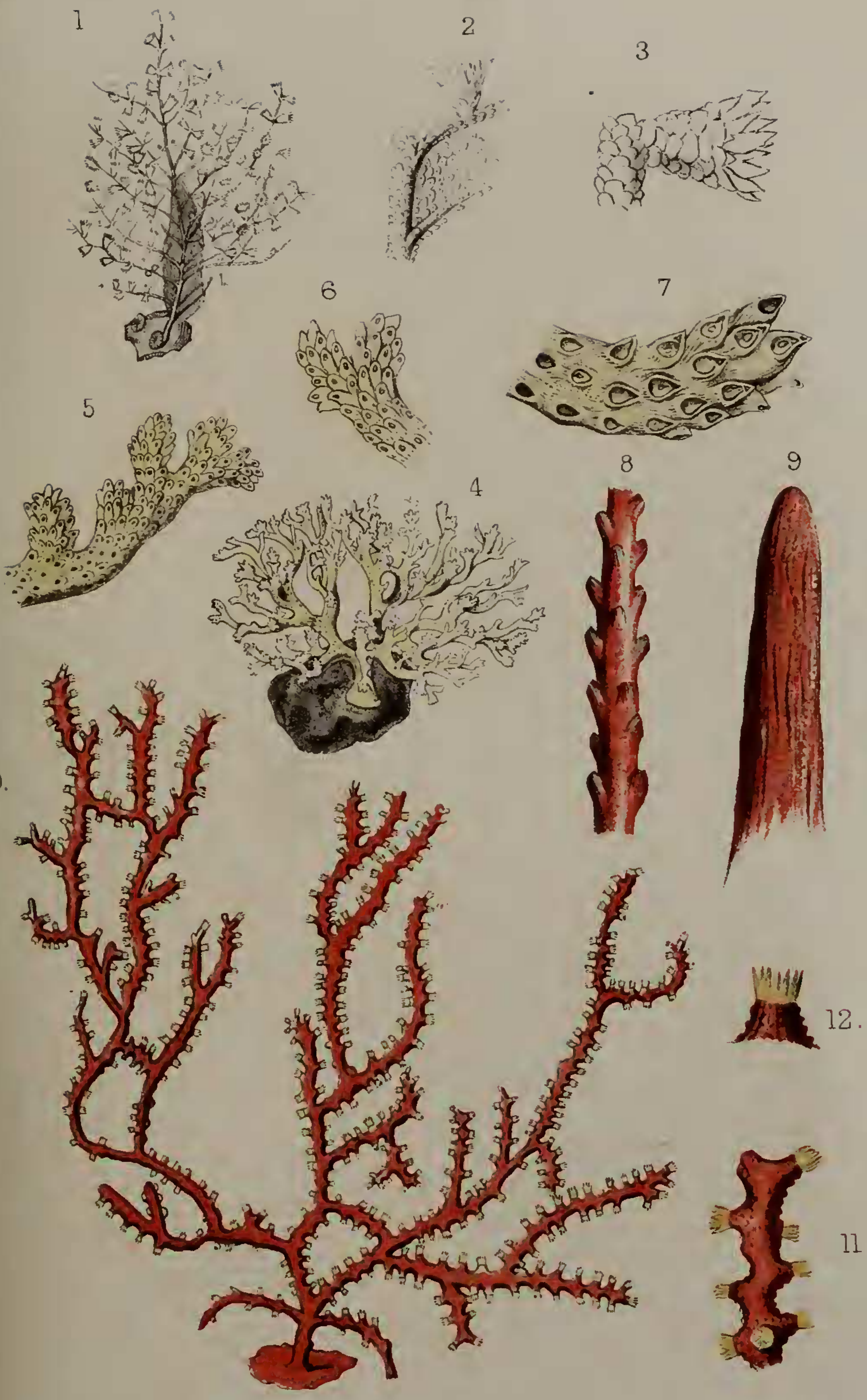
Coral slightly furcately branched; branches club-shaped, enlarging upwards, and then rapidly contracting at the tip; polypiferous cells many, in numerous close concentric rings, forming regular



G.H. Ford.
Mintern Bros Chromo lith.

NEW ANTARCTIC CORALS.

BRITISH Z 8 NATURAL HISTORY



H Ford.   Mintern Bros. Chromo lith.

NEW ANTARCTIC CORALS

BRITISH MUSEUM
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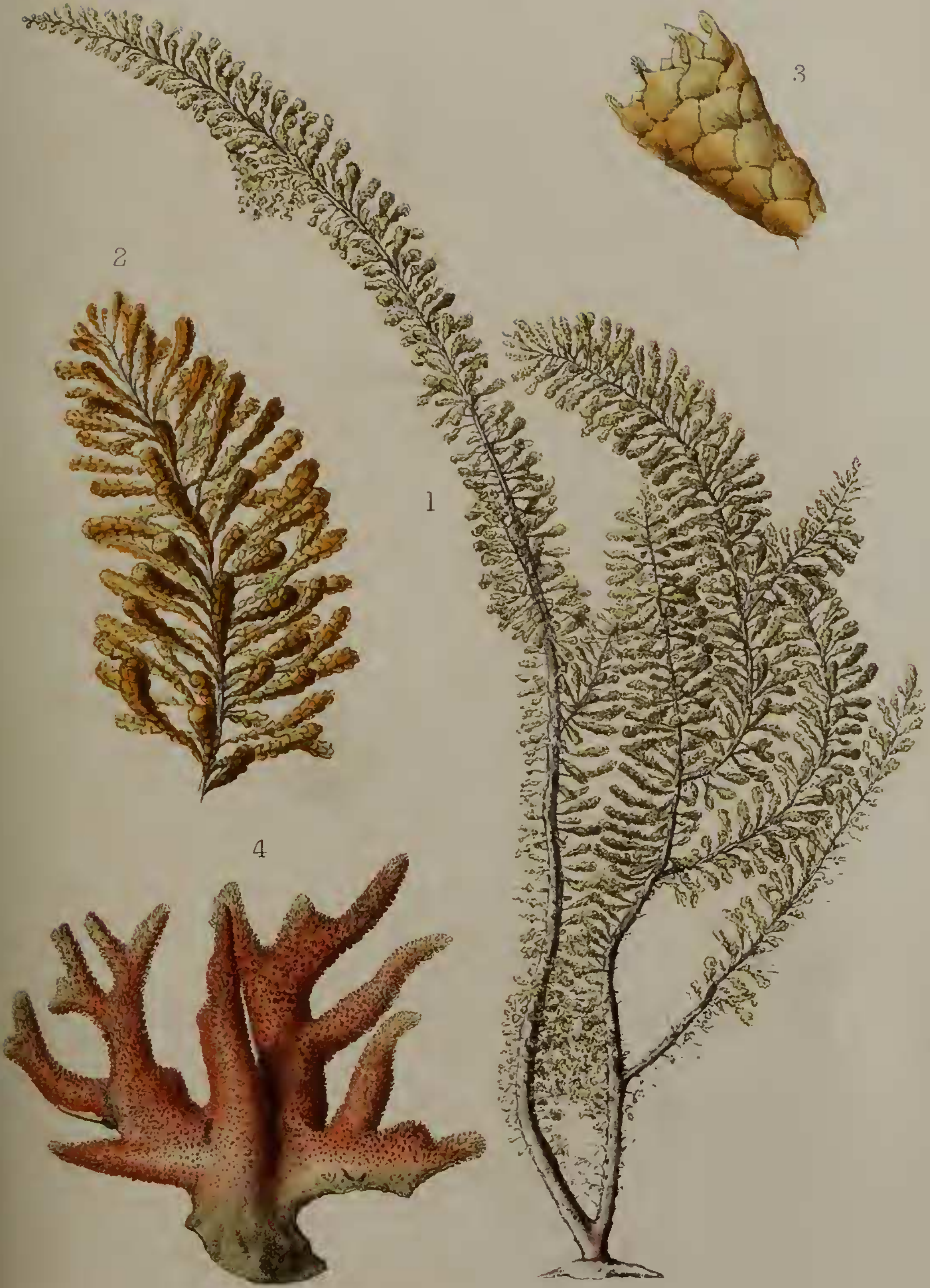
P. Z. S. 1872. Pl. LXIV.



G. H. Ford.

Mintern Bros. Chromo lith.

NEW ANTARCTIC CORALS.

BRITISH MUSE
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whorls round the branches, the cells oblong, cylindrical, contracted at the base, and each covered with six longitudinal series of transverse oblong hexangular scales, truncated at top and closed with elongated more or less acute scales, converging to a point when the animal is withdrawn; axis covered with small scales.

The artist compares a magnified figure of the polype-cells with the cells of the *Primnoa lepadifera* (Plate LXII. fig. 4), to show the difference in the form of the scales with which the cells are covered and closed, the latter being more unequal and blunt.

FANNYELLA ROSSII. (Plate LXII. figs. 1–3).

Primnoa rossii, n. s., Stokes, ? MS.

Hab. Antarctic Ocean (*Ross*).

I have dedicated this genus to Mrs. Hooker, who took great interest in the results of Captain Ross's Antarctic voyage. I have named it in the same manner as Mr. Busk did *Nellya* and I *Emmia*, after ladies who were both friends of Mrs. Hooker.

ERRINA FISSURATA. (Plate LXII. figs. 5 & 6.)

Coral subcylindrical, pale reddish brown, forked at the base, each branch elongate; one irregularly forked in the upper part, the other with a branch on the outer side, which appears to have been irregularly forked on its upperside; the apical branches subcylindrical, rounded at the end; cells mostly prominent, acute, with a central slit on the outer side, and with some scattered larger circular pits, without any raised edge, chiefly on the centre line of the branch.

Madrepora fissurata, n. s., Stokes, ? MS.

Hab. Antarctic Ocean (*Ross*).

This figure is marked "J. S." in the same colour as the coral is painted, doubtless the initials of the artist. The figure is about 4 inches long.

TUBULIPORA NIVALIS. (Plate LXIII. figs. 4–7.)

Coral branched; branches ascending, repeatedly branched, with a number of short lobes all on the upperside, white.

Hab. Antarctic Ocean, growing on a pebble.

Mr. Kent thinks this coral belongs to the genus *Porina*, and is allied to the fossil species figured in D'Orbigny's 'Paléontologie Française: Terrains Crétacés,' plate 714. figs. 8–10.

Captain Henry Toynbee, of the Meteorological Office, has brought to the British Museum two corals which were obtained by Capt. James Clark, R.N.R. (now Captain of the ship 'Western Empire'), when dredging on a calm day off Burwood Bank, lat. 54° 27′ S., long. 59° 40′ W., in 45 fathoms, on the 1st January, 1872, consisting of a fine specimen of *Porella* and a specimen of *Thouarella antarctica*. Captain James Clark, through the kind intervention of Captain Toynbee, has presented these beautiful specimens to the British Museum.

THOUARELLA ANTARCTICA. (Plate LXIV. figs. 1–3.)

Coral branched, of bright yellow colour; branches few, of very unequal length, of elongated cylindrical shape, each being surrounded on all sides by very numerous club-shaped branchlets, each ending in a polype. The branches of unequal length, and the branchlets, make it like a cylindrical bottle-brush which is rather attenuated towards the tip.

Primnoa antarctica, Valenc. Voy. Ven. t. xii. f. 2.

Thouarella antarctica, Gray, Cat. Lithophytes in B.M. p. 45; Ann. & Mag. Nat. Hist. 1872, ix. p. 482.

Hab. Falkland Islands, on Burwood Bank, in 45 fathoms, very abundant (*Capt. James Clark, R.N.R.*).

This species was first described by M. Valenciennes in the 'Voyage of the Venus,' t. xii. f. 2, from a specimen found by Admiral Dupetit Thouars. The specimen was from the Falkland Islands. The specimen figured is small and very imperfect, and would scarcely give an idea of this beautiful coral, which Captain Clark found very abundant. The specimen in the Museum has one branch 18 inches long, and gives quite a different idea from M. Valenciennes's figure. Mr. Carter has kindly examined the cells under the microscope, and observes that they are formed of oval imbricated scales, lacerated on the edge, with radiating lines and scattered circular dots of a calcareous secretion. Unfortunately these scales are very deciduous.

PORELLA ANTARCTICA. (Plate LXIV. fig. 4.)

Coral fan-shaped, thick, rather compressed, divided into several branches, some simple and gradually tapering, the others more or less furcately divided; of a bright crimson colour, with the more compressed forked tips paler, whitish.

Porella antarctica, Gray, Ann. & Mag. Nat. Hist. ix. p. 482, 1872.

Hab. Falkland Islands, on Burwood Bank, lat. 54° 27′ S., long. 59° 40′ W., in 45 fathoms (*Capt. James Clark, R.N.R.*). B.M.

Nearly allied to *Porella cervicornis* of the British seas.

Dr. Joseph Hooker, who accompanied Ross during his Antarctic voyage, made a series of the drawings of the animals which they observed. No. 255 of these drawings represents a new species of *Primnoadæ*, which I described in the 'Catalogue of Stony Corals in the British Museum,' p. 45, under the name of

HOOKERELLA PULCHELLA. (Plate LXIII. figs. 1–3.)

Hookerella pulchella, Gray, Cat. Lith. B. M. p. 45.

The coral was 2 inches high, and was obtained in the Antarctic Ocean.

The coral is erect, fan-shaped, pinnate; branches simple, nearly parallel; bark and polype-cells covered with large imbricate scales; polype-cells bell-shaped, contracted at the base, open and fringed, with larger scales at the mouths, in close series on the upper and lower sides of the branches, opposite to each other.

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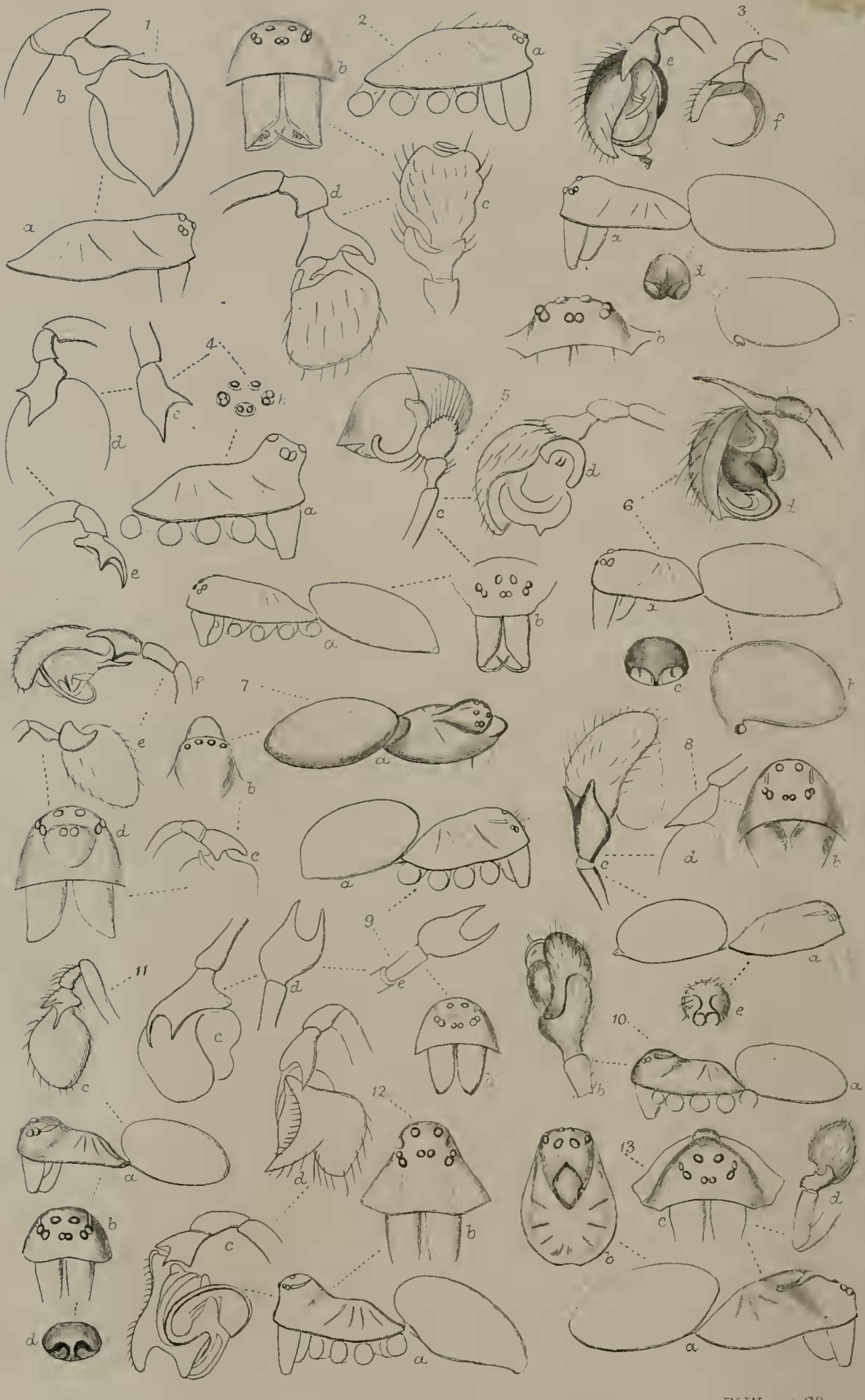

O P Cambridge del^t
A.T. Hollick lith.

W West & C^o imp.

New Species of Erigone.

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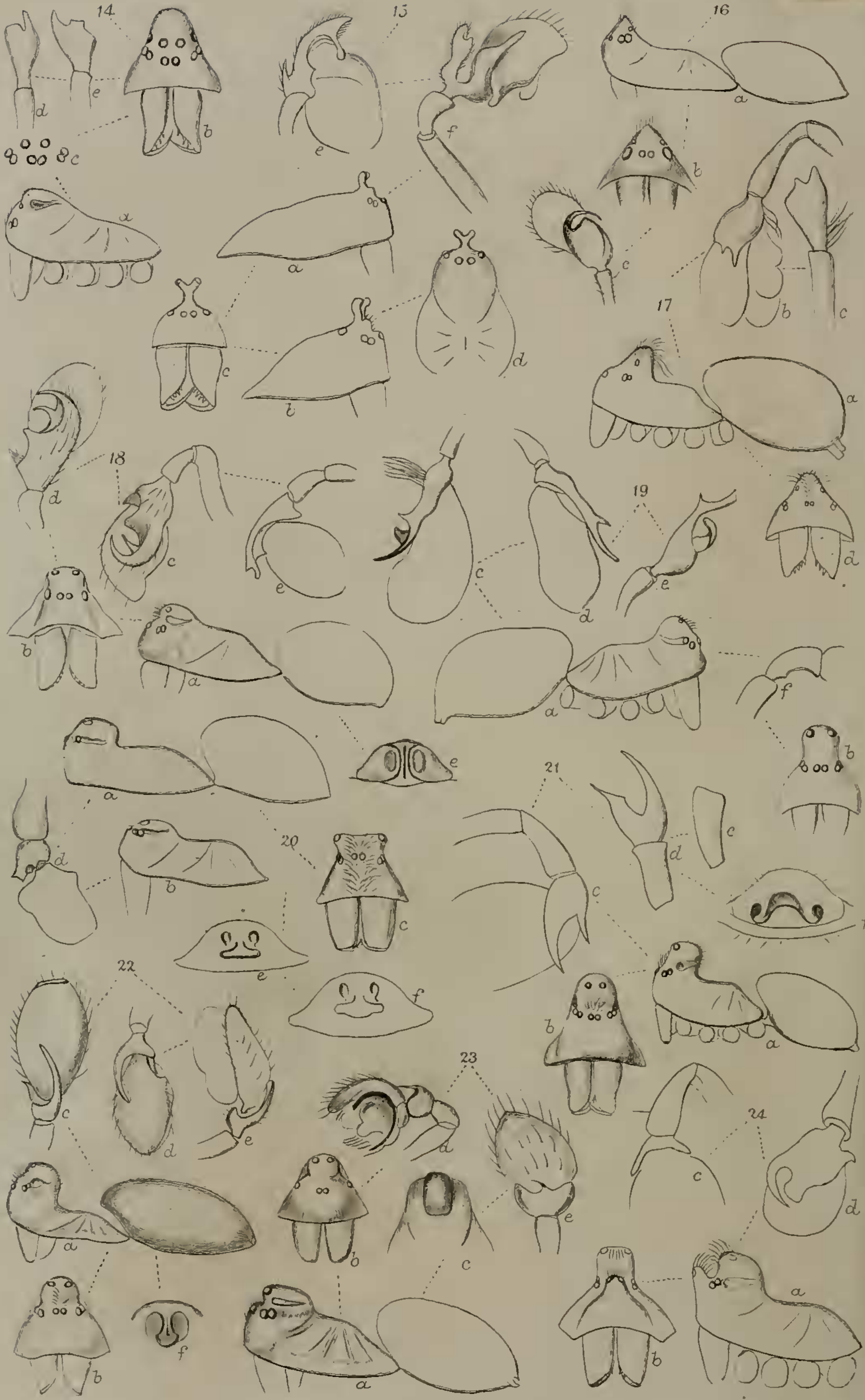

O. P. Cambridge delt.
A. T. Hollick lith.

W West & Co imp

New Species of Erigone.

Sydella.

Coral erect (?), straight, cylindrical, rather tapering, covered with cylindrical cells, tapering at the end and placed in four rather irregular longitudinal series, covered externally with red fusiform spicules, placed very close together in a longitudinal direction. Polypes completely retractile, leaving a small rounded end to the cell when retracted.

Only known from the figure of Dr. Hooker, which apparently represents the apex of a branch, and does not show any internal axis if one exists.

This figure is here accurately copied.

Sydella australis. (Plate LXIII. figs. 8 & 9.)
Hab. Australia, Sydney (*Dr. Hooker*).

Mopsella australis.—There is a beautiful figure in Dr. Hooker's drawings of a coral which I believe is the same as the one here described; but it is much larger and the polypes much closer: there is no representation of the axis. No habitat is mentioned. This drawing is copied, with the rest of Dr. Hooker's drawings, on Plate LXIII.

EXPLANATION OF THE PLATES.

Plate LXII.

Figs. 1–3. *Fannyella rossii.*
4. *Primnoa lepadifera*, polype-cell from North Sea for comparison.
5 & 6. *Errina fissurata.*
7–9. *Mopsella australis.*
(All from Mr. Stokes's drawings.)

Plate LXIII.

Figs. 1–3. *Hookerella pulchella.*
4–7. *Tubulipora nivalis.*
8 & 9. *Sydella australis.*
10–12. *Mopsella australis.*
(All from Dr. Hooker's drawings, except figs. 4–7, which are from Mr. Stokes's drawings.)

Plate LXIV.

Figs. 1–3. *Thouarella antarctica.*
4. *Porella antarctica.*
(From specimens in the British Museum.)

5. Descriptions of Twenty-four new Species of *Erigone*.

By the Rev O. P. Cambridge, M.A., C.M.Z.S.

[Received June 4, 1872.]

(Plates LXV. & LXVI.)

With one exception, the Spiders here described, and supposed to be new to science, are European, the single exception being one found near Alexandria, Egypt (*Erigone alexandrina*). One species only (*E. prominula*) has been found also in England; of the remainder two were found at Rome, one in the neighbourhood of Paris, one at

Corfu, one on the Styrian Alps, and the rest near Nuremberg in Bavaria.

It is almost impossible to give, within any reasonable limits, such descriptions of these minute Spiders (many of which are exceedingly nearly allied to others already described) as will make them easily determinable from description alone; magnified figures are therefore given of those portions of their structure upon which, *par excellence*, specific distinctions are based—that is, the form of the cephalothorax and the form and structure of the palpi and palpal organs of the adult males. Wherever possible, the form of the genital aperture in the females is also figured. There are, apart from their minute size, peculiar difficulties in the determination of Spiders of the genus *Erigone* (taking that to include most of *Neriene*, Bl., and all of *Walckenaëra*, id.); but as I am engaged at the present time in collecting materials for an attempt to recast the arrangement of the numerous species contained in it, I do not propose here to enter upon those difficulties, further than to remark that every fair description, and all good figures of the above noted portions of structure of any species supposed to be new to science, will most materially assist towards a complete and satisfactory monograph upon the whole group, which now includes several hundred species.

ERIGONE (NERIENE, Bl.) ARIETANS, sp. n. (Plate LXV. fig. 1.)

Male adult, length $\frac{1}{16}$ of an inch.

The *cephalothorax* is glossy and of a deep blackish-brown colour, margined with black, the normal grooves and indentations being indicated by yellow-brown; the *legs* are orange-yellow, and the *abdomen* black; the *palpi* are of a dull greenish-yellow colour, the radial and digital joints strongly suffused with black. The fore part of the caput, where the eyes are seated, is a little prominent; the clypeus is impressed in the middle, but prominent at the lower margin, and its height equals two thirds of that of the facial space; the profile line of the cephalothorax is a little depressed near the junction of the caput and thorax.

This species is closely allied to *Neriene subtilis* (Cambr.), which it resembles in the form of the digital joint of the palpus; but the form of the cubital joint is very peculiar, and at once distinguishes it from all other species known to me. This joint is produced to near double its length in front, in an obtusely pointed prominent form; the radial joint is also slightly produced at its extremity, rather on the outer side; the digital joint is large, with a small pointed prominence at its base on the inner side, and a large subconical one near the middle on the outer side; the palpal organs are prominent and complex, with corneous spiny processes.

A single example found by Dr. L. Koch at Nuremberg, and sent to me for examination.

ERIGONE (NERIENE, Bl.) INCOMTA, sp. n. (Plate LXV. fig. 2.)

Male adult, length $\frac{1}{13}$ of an inch.

The *cephalothorax* is of a deep shining black-brown colour, and has a longitudinal central row of bristly hairs directed forwards, the two hinder ones being the longest and widest apart. The caput and thorax are confluent, and the normal grooves and furrows are not strongly defined; the height of the clypeus exceeds half that of the facial space, and it is rather strongly impressed just below the eyes, and prominent near the lower margin.

The *eyes* are seated on tubercles, those on which the lateral pairs are placed being strong; they are not very unequal in size; those of the hinder row are about equidistant from each other; each eye of the hind central pair is separated from that one of the fore central pair opposite to it by a space not much greater than the diameter of the former. The *legs* are of moderate length, 4, 1, 2, 3; their colour is yellow, the femora and tibiæ being bright orange; and they are furnished with hairs, some of which, on the uppersides, are erect.

The *palpi* are not very long; they are of a greenish-yellow colour suffused with brown, especially on the radial and digital joints; the cubital joint is short, strong, and somewhat gibbous in front; the radial joint is small at its junction with the cubital, but enlarges quickly, and is produced at its outer extremity into a strong, obtusely ending, and slightly bent apophysis; it is also rather prominent (or produced), both at its hinder and inner extremities; the digital joint is large, somewhat truncate at its extremity, beneath which the palpal organs have a strong coiled and rather prominent black spine connected with them; and in contact with it there is some semitransparent, whitish membrane. The *sternum* is heart-shaped, convex, furnished with a few bristly hairs, and similar in colour to the cephalothorax. The *maxillæ* and *labium* are normal in form, and of a rather lighter colour than the sternum.

The *abdomen* is rather large, of an oval form, and moderately convex above; it is glossy, and of a jet-black colour, slightly rugulose, and sparingly furnished with short, strongish hairs; some minute ones have a golden lustre in some lights when in spirit of wine. The *falces* are strong, straight, and nearly vertical; they exceed in length the height of the facial span, and have a cluster of fine sharp teeth towards their inner extremities.

The female is rather larger than the male, and has the abdomen much more convex above; but in colour and other general characters the two sexes are similar.

An adult example of each sex, found near Nuremberg, was received for examination from Dr. L. Koch. It is very nearly allied to *Neriene saxatilis* (Bl.), but may be easily distinguished by the form of the radial joints of the palpi, and by the coiled spine connected with the palpal organs; from *Erigone sundevallii* (Westr.) it may be at once distinguished by the absence of spines beneath the legs of the first two pairs.

ERIGONE (NERIENE, Bl.) FORENSIS, sp. n. (Plate LXV. fig. 3.)

Male adult, length 1 line.

This Spider is of ordinary general form and structure. The clypeus is impressed immediately below the eyes, and slightly prominent above the falces, and its height rather exceeds half that of the facial space; the lateral pairs of eyes are seated on strongish tubercles, and the foremost one of each appears to be the largest of the eight; the space between those of the hind central pair is very slightly smaller than that between each and the hind lateral on its side; those of the fore central pair are contiguous to each other, and each is the same distance from the hind central on its side as the hind centrals are from each other. The colour of the cephalothorax and falces is yellow-brown, and that of the legs and palpi is yellow. The legs are furnished with hairs, and are not very strong, but moderately long; their relative length is 1, 4, 2, 3. The palpi have the radial joint of peculiar and characteristic form; it is stronger than the cubital, and has a small, prominent, sharp spine-like apophysis from its outer extremity; its fore extremity is produced into a slightly curved, strongish, obtusely pointed apophysis; its inner extremity is protuberant and strong, and from its hinder extremity there issues a strong, longish, curved, tapering, sharp-pointed, spiny apophysis, which, curving over the palpal organs, looks at first as if it were part of them; but on closer inspection from different points of view, its union with the radial joint is plainly perceptible: the digital joint is of somewhat irregular form, having a kind of flat-sided lobe near its base, the flattened side directed outwards; this peculiarity of structure reminds one of that of the digital joint of *Neriene subtilis* (Cambr.), *N. conigera* (id.), and others: the palpal organs are well developed, rather complex, and are surrounded beneath by a long, slender, black spine, curved in a circular form. The abdomen is of a dull blackish hue, tinged with olive, and somewhat palest on the upperside, along which, towards the hinder part, are visible (in spirit of wine) some fine transverse angular lines, or chevrons. An adult female taken under the same stone as the male, resembled it in colour and other general characters; but the height of the clypeus was less, both positively and proportionally, and the epigyne was prominent, but not much so: possibly this may not be the female of the male above described.

A single example of each sex was found by myself under a stone, among the ruins of the Forum at Rome, in February 1865.

ERIGONE (NERIENE, Bl.) PROMINULA, sp. n. (Plate LXV. fig. 4.)

Male adult, length $\frac{1}{17}$ of an inch.

The *cephalothorax* is of a deep black-brown colour, margined with black; the caput is rather prominent and produced; the summit of the elevated part slopes slightly and flattishly forwards, and the occiput rather abruptly backwards. The height of the clypeus (which is impressed at the middle, but prominent at the lower margin) considerably exceeds half that of the facial space; the normal furrows and indentations are well marked.

The *eyes* are in four pairs, forming a transverse oval, and occupying the whole extremity of the cephalic prominence; those of the hinder pair are on the posterior margin of the promiuence, and are separated from each other by about the length of an eye's diameter; those of the foremost pair are close together on the fore margin; those of the lateral pairs are seated obliquely, each hind lateral eye being removed about an eye's diameter from that of the hinder pair on its side; so that these four form a strongly curved row, and are equidistant from each other. All are seated on strongish tubercles, and are dark-coloured and indistinct.

The *legs* are moderate in length and strength, of a yellow colour, tinged with orange; their relative length is 4, 1, 2, 3; and they are furnished with hairs, of which a few have a semispinous character and are nearly perpendicular.

The *palpi* are paler and duller in colour than the legs, the digital joint and a portion of the radial are brown; the cubital and radial joints are very short, the latter being the stronger of the two; it is slightly and obtusely produced behind, and at its fore extremity are two pointed apophyses, one in front the longest and strongest, the other, of the nature of a sharp prominent tooth, on the outer side. The *abdomen* is of a broadish and somewhat flattened oval form; its colour is deep black; it is clothed perceptibly with hairs, and projects considerably over the base of the cephalothorax.

A single example, captured at Nuremberg by Dr. L. Koch, by whom it was forwarded to me for examination. In the form of the cephalothorax and the position of the eyes it bears some considerable resemblance to the genus *Theridion*. Among its near congeners it seems to be allied to *Walckenaëra humilis* (Bl.); the form of the cephalothorax and the radial joints of the palpi easily distinguish it from any other yet described species. Other examples have since been captured at Newhaven, Sussex, by M. Eugène Simon, in the spring of 1871; these were found on furze bushes, among the shoots covered with bloom.

ERIGONE (NERIENE, Bl.) INCONSPICUA, sp.n. (Plate LXV. fig. 5.)

Male adult, length $\frac{1}{13}$ of an inch.

The cephalothorax, falces, maxillæ, and labium of this species are of a yellow-brown colour, the sternum being suffused with blackish; the legs are tinged with orange, and the abdomen is of a dull olive-greenish brown. It is closely allied to *Linyphia*? *microphthalma* (Cambr.), both in size, general form, and structure, but may be distinguished by the larger size of the eyes, a difference of structure in the palpal organs, and also by the armature of the legs; in the present species the legs are furnished with no *spines*, properly so called, these being represented by bristles. It also bears considerable resemblance to *Linyphia decens* (Cambr.); but that species differs remarkably in the colour and clothing of the abdomen.

The radial joints of the *palpi* are produced at their extremity in front, in a rounded form, near which, close to the upper fore margin, is a single rather conspicuous series of bristly hairs directed forwards, and on the outer side are also some longer ones of the same nature; close to the outer side of this joint the palpal organs have a circularly curved, strong, corneous process, from within the curvature of which there issues from these organs a small, black, pointed projection. The two hind central eyes are nearer together than each is to the lateral eye of the same row on its side.

This Spider is of one of those obscure species which occupy the debatable ground between *Linyphia* and *Erigone.* To both of these genera it is allied by strong characters; but, as it appears to me, it is more strongly linked to the latter than to the former. Probably it should form one of the genus *Bathyphantes* (Menge); but the distinctions between this and *Erigone* (Westr.) have not been yet sufficiently characterized, although undoubtedly its special characters are widely different from those of some other groups of *Erigone.* A single example was received for examination from Dr. L. Koch, by whom it was captured at Nuremberg.

ERIGONE (NERIENE, Bl.) ROMANA, sp. n. (Plate LXV. fig. 6.)

Male adult, length 1 line.

The colour of the cephalothorax and sternum are deep brown; the abdomen is black, and the legs are orange yellow-brown; the rest dull brown, with a yellowish tinge. In general form and structure this Spider is of an ordinary type; the cephalothorax is rather short, and less flattened behind than in many others; the clypeus is equal in height to half that of the facial space, and is very slightly impressed immediately below the eyes: the eyes are rather prominent, being seated on tubercles; they are in the ordinary position, and not very unequal in size; those of the hinder row (which is longest and most curved) are equally separated, and each of those of the fore central pair (which are contiguous to each other) is separated from the hind central on its side by a space equal to that which separates those of the hind central pair; the eyes of each lateral pair are obliquely placed and contiguous to each other. The *legs* are moderately long and strong, and are furnished rather thickly with hairs, among which are some very slender, diaphanous, erect, spine-like bristles. The *palpi* are moderately long and not very strong; the cubital is longer and stronger than the radial joint, and slightly bent: the radial has its upper extremity produced into a long, not very strong, nearly straight, tapering apophysis, equal in length to both radial and cubital joints together, and its point, which is sharp (when looked at sideways) and corneous, bends a little downwards; this apophysis projects over the digital joint very prominently: the digital joint is large, and the palpal organs are well developed and rather complex; a strong, circularly coiled, black spine issues from a roundish corneous lobe on their outer side, and a smaller curved spine is visible within the coil of the former. The falces are strong, rather long, and vertical. The abdomen is oval, black, and glossy, and nearly double the length of the cephalothorax. The female resembles the male in general characters and colour. The epigyne is prominent, and, when looked at in profile, projects visibly beyond the surface of the abdomen, and with a backward direction; the genital aperture is also characteristic.

The form of the radial joint of the palpus in the male is very strongly characteristic of this species, and affords an easy character by which to determine it. An adult example of each sex were found by myself under stones in the baths of Caracalla at Rome, in February 1865.

Erigone (Neriene, Bl.) sila, sp. n. (Plate LXV. fig. 7.)

Male adult, length $\frac{1}{15}$ of an inch.

The colour of this very distinct species is yellow-brown, the legs and palpi being pale yellow, tinged with dull orange. In its general form and structure it is of the ordinary type; but the strongest distinct character is furnished by a prominent, somewhat oval, prow-like projection of the upper part of the clypeus, just beneath the eyes; the profile line of the thorax behind the eyes is rather hollow; and the hind slope is abrupt. The eyes are in four pairs, just above and behind the clypeal prominence, and do not differ greatly in size; those of the fore central pair are smallest, and rather difficult to be distinguished; those of the hind central pair are rather nearer to each other than each is to the hind lateral on its side; those of each lateral pair are placed obliquely, and are contiguous to each other. The *legs* are rather short, moderately strong, and furnished sparingly with hairs only.

The *palpi* are short; the radial and cubital joints are of about equal length, the former being much the strongest, spreading outwards in a somewhat obtusely angular form, and produced in a rather curved, blunt-pointed form at the extremity on the upperside; the digital joint is rather large; and the palpal organs are highly developed and tolerably complex; a longish, black, curved, sharp-pointed spine issuing from near their extremity on the outer side forms a bold sweep round them; there are also several other spiny corneous projections in connexion with these organs. The abdomen is oval, rather large, and of a somewhat flattened form; and its upper surface is covered by a coriaceous, finely punctured integument very sparingly furnished with short fine hairs.

An adult male of this Spider was received from Dr. L. Koch, by whom it was found near Nuremberg, Bavaria.

Erigone (Walckenaëra) pallens, sp. n. (Plate LXV. fig. 8.)

Male adult, length $\frac{1}{13}$ of an inch.

The whole of the fore part of this Spider, including the legs and palpi, are of a brightish but pale yellow-brown colour, the abdomen being of a sooty drab, tinged with yellow-brown.

The general form and structure is sufficiently ordinary, resembling nearly that of *E. scabricula*, Westr. (*W. aggeris*, Cambr.), and others; but it may be distinguished from others having a somewhat similar conformation of the cephalothorax by its colour, as well as by the structure of the palpi.

The fore part of the caput has scarcely any distinct elevation, but is rather bluff and rounded; the height of the clypeus is scarcely that of half the facial space: the eyes are in the ordinary position, and in the usual four pairs; those of the fore central pair are very minute and contiguous to each other, and are in a straight line with the foremost eyes of the two lateral pairs, which are slightly the largest of the eight; those of the hinder (or upper) pair are separated by rather more than an eye's diameter from each other; a long, narrow indentation, of a tapering form, runs backwards from a little above and behind each hinder eye of the two lateral pairs.

The *legs* are moderately long, rather short, and are furnished with hairs and a few slender erect bristles. The *palpi* are short; the radial is much stronger, though about the same length as the digital joint; the former has its extremity on the upperside divided (or, as it were, cleft), leaving two points; that towards the outer side is the strongest and most prominent, while the inner one adheres more closely to the digital joint. These two points give the fore extremity of the radial joint a strongly notched appearance. The palpal organs are well developed and prominent, but not very complex; they consist chiefly of a large, somewhat globular, shining, corneous lobe, with the fore part of which is connected a small, black, somewhat curved prominent spine.

The female resembles the male, except in the rather less convexity of the caput, the eyes being thus more closely grouped, though relatively in the same position; the form of the sexual aperture is characteristic, and may be understood better from the figure in the engraving than from any description that could be given.

Adults of both sexes were received from Dr. L. Koch, by whom they were captured in the neighbourhood of Nuremberg.

ERIGONE (WALCKENAËRA) BISCISSA, sp. n. (Plate LXV. fig. 9.)

Male adult, length $\frac{1}{18}$ of an inch.

The cephalothorax, falces, maxillæ, and sternum of this species are of a yellow-brown colour, the *legs* and *palpi* being yellow-brown, tinged with red. The *abdomen* is of a short oval form, very sparingly furnished with hairs, and of a dull (though shining) greenish sooty-black colour. The *caput* is not elevated, but is simply rounded off on all sides, the occiput being evenly confluent with the thorax; the normal grooves and furrows are indistinct; two longish, narrow, slightly curved, longitudinal indentations run backwards from between the lateral and hind central pairs of eyes; on the sloping space between the eyes of the fore and hind central pairs are some short hairs; the height of the clypeus appeared to be less than half of that of the facial space; the eyes of the hind central pair are about one eye's diameter from each other; the fore lateral eyes are the largest of the eight, and are in a straight line with those of the fore central pair, which are very small, indistinct, and contiguous to each other, and each is separated from the fore lateral eye on its side by a space equal to its own diameter.

The *legs* are moderately long and strong, their relative length 4, 1, 2, 3, and furnished with hairs.

The *palpi* have the radial and cubital joints very nearly of equal length; but the former is greatly the strongest; it is produced obtusely behind, and to a considerably greater extent in front, where it terminates with two points or cusps; the outer one of these is the most prominent, largest, strongest, and slightly the longest; the inner one is curved, and adheres more closely to the surface of the digital joint; these cusps give the fore extremity of the joint a deeply emarginate appearance; and the colour of the produced portions is deep brown: the digital joint is large and dark brown. The palpal organs are prominent, but not very complex, with a short, strong, prominent, and slightly curved, black, spiny point at their extremity.

An adult male of this Spider was sent me for examination by Dr. Koch, by whom it was found at Bayreuth, in Bavaria. It is allied to *Walckenaëra ignobilis* (Cambr.), and very nearly to *Erigone insecta* (L. Koch); but differences in the structure of the palpi will serve, with other specific characters, to distinguish it.

ERIGONE (WALCKENAËRA) GRÆCA, sp. n. (Plate LXV. fig. 10.)

Male adult, length $\frac{3}{4}$ of a line.

The colours of this small species are those common to very many others. Cephalothorax, falces, labium, maxillæ, and sternum deep yellow-brown and glossy. Legs dull pale yellowish brown. Abdomen of a rather sooty brown-black. Its general form is very nearly that of *Walckenaëra aggeris* (Cambr.), but it is of rather a more slender build: the eyes are in the ordinary four pairs; the foremost eyes of each of the two lateral pairs are the largest, and are in a straight line with those of the fore central pair: the height of the clypeus is equal to one half that of the facial space; and from behind, and a little above, each lateral pair of eyes a long and rather strong indentation runs backwards and defines the cephalic elevation. The *legs* are rather long and slender, and furnished only with hairs. The *palpi* are similar in colour to the legs; they are not very long nor strong; the radial is much stronger than the cubital joint, and is broadly and obtusely produced at its upper fore extremity, a little towards the inner side. In this it differs from all others with a somewhat similar form of cephalothorax yet known to me; the digital joint is rather small, and of a roundish oval form; the palpal organs are not very complex, consisting chiefly of a roundish corneous lobe, at the extremity of which, beneath the fore margin of the digital joint, is a blackish, curved, pointed spine.

Two adult males of this little Spider were found by myself beneath stones on the island of Corfu, in the spring of 1865.

ERIGONE (NERIENE) ALEXANDRINA, sp. n. (Plate LXV. fig. 11.)

Male adult, length $\frac{3}{4}$ of a line.

The cephalothorax of this Spider is of ordinary form, very like that of *Neriene pygmæa* (Bl.), *N. latebricola* (Cambr.), and others; the clypeus is full and rounded, and its height equals half that of the facial space; the occiput is slightly gibbous, and a strong indentation runs backwards from immediately behind each lateral pair of eyes; it is of a bright yellow-brown colour, the normal grooves and indentations marked by dusky, ill-defined lines. The eyes are not very unequal in size; they are in the usual four pairs, forming, when looked at from the front, two rows, the upper one longest and strongly curved, the lower one nearly straight; the space between the two of the hind central pair is rather less than that between each and the hind lateral on its side; those of the fore central pair are the smallest of the eight, and are contiguous to each other; and those of each lateral pair are placed obliquely and contiguous to each other. *Falces* strong and massive, and similar in colour to the cephalothorax. *Legs* moderately long and strong; their relative length is 4, 1, 2, 3; those of the fourth pair in the female appeared to be longer in proportion than those of the male; they are furnished with hairs, and are not very dissimilar in colour to the cephalothorax, but are more strongly tinged with reddish orange colour. The *palpi* are short, moderately strong, and similar in colour to the legs; the radial is equal to the cubital joint in length, but much stronger, and has a small, nearly straight, tapering apophysis near the middle of its fore extremity; and its outer extremity is also a little produced, giving it rather a pointed appearance when looked at from the front; the digital joint is small and of an oval form; and the palpal organs are not very complex, though well developed. The sternum is heart-shaped, glossy, very convex, and of a dark yellow-brown colour. The abdomen is oval and moderately convex above; it is of a dull sooty brown colour; and when in spirit of wine some examples show various pale transverse lines on the hinder part of the upperside.

The female resembles the male, except in being larger; and the genital aperture is of characteristic form.

Adults of both sexes were found by myself among water-weeds in a swamp near Alexandria, Egypt, in 1864.

ERIGONE (WALCKENAËRA, Bl.) SIMONII, sp. n. (Plate LXV. fig. 12.)

Male adult, length 1 line.

The cephalothorax of this very distinct species is of a yellowish red colour; the legs, palpi, falces, and maxillæ yellow; the sternum somewhat darker; and the abdomen (which is rather large and considerably convex above) is of a bright brick-red, finely mottled and marked above with paler spots and lines, not very visible except in spirit of wine. The *caput* is a little elevated; the hinder slope of the elevation is long and gradual, forming a rounded occiput. The height of the clypeus is nearly two thirds of the facial space; and it is slightly impressed in the middle, forming a curved profile line; a deep longitudinal excavation or indentation, of a tapering form, runs backwards from each lateral pair of eyes.

The *eyes* are seated on black spots on the fore slope of the elevation of the caput; those of the hinder pair are near the summit, those of the fore central pair on the fore margin; these are separated from those of the hinder pair by the same space that separates these last from each other; those of the lateral pairs are placed obliquely, and a little below the level of the fore centrals, when looked at from the front.

The *legs* are long and slender; their relative length 4, 1, 2, 3, those of the fourth pair being perceptibly the longest; they are furnished sparingly with hairs; each genual joint has a short black bristle on its fore side; and another similar one is placed about the middle of the uppersides of the tibiæ.

The *palpi* have the cubital joints clavate, short, and bent downwards; the radial is of about equal length with the cubital, and is produced at its extremity into two short points, one on the inner, the other on the outer side, forming a strongly emarginate margin: the digital joint is large and of an irregular and unusual form; it has a large, sharp-pointed, nearly concave prominence towards the extremity on the outer side, and another at its base on the same side, whose extremity is almost in contact with the fore extremity of the radial joint; these prominences run together; and the upper line of communication is black and fringed with short strong bristly hairs: the palpal organs are very prominent, well developed and complex; a fine black spine issues from near their fore extremity, and curves backwards and inwards with a large, prominent, circular sweep. The *sternum* is similar in colour to the abdomen. The *falces* are rather long, moderately strong, straight (?), vertical, and with a few *very* minute teeth near their extremity on the inner side.

Examples of both sexes of this Spider were received in 1866 from M. Eugène Simon, by whom they were captured near Paris; and a single adult male was subsequently sent me for examination by Dr. L. Koch, by whom it was found at Nuremberg.

The female resembles the male in colours; but the abdomen is far more convex above, and the genital aperture is of a bright deep red-brown colour.

ERIGONE (NERIENE) SARCINATA, sp. n. (Plate LXV. fig. 13.)

Male adult, length 1 line.

This Spider is nearly allied to *Neriene excisa* (Cambr.): like that species, there is a protuberance or gibbosity on the back part of the caput; but in the present species this gibbosity is situated nearer to the thoracic junction, and is divided from the fore part of the caput by a distinct and rather deep oblique cleft. It is also, when looked at from above and behind, pointed at its fore extremity; the portion of the caput between the cleft and the hind central eyes is also rather gibbous, that part and the outer area forming a longish uniform slope to the clypeus, which is less in height than half that of the facial space. The colour of the cephalothorax is yellow-brown, the gibbosity of the caput being paler. The *falces* are neither very long nor strong, and are similar in colour to the cephalothorax. The *legs* are long, relative length 4, 1, 2, 3, moderately strong, yellow in colour, and furnished with hairs; there is a single short, slender black bristle at the fore extremity, on the upperside, of the genual joints, and a few long, diaphanous, pale, slender erect bristles on other parts of the legs.

The *palpi* are moderately long and strong; the cubital is upwards of three times the length of the radial joint, which is slightly produced in a curviangular form on the inner extremity; and at the middle of the fore extremity is a small corneous-looking prominent point or tooth. The digital joint is short, oval, and small; the palpal organs are well developed, but not very complex. The form of the palpi distinguishes this Spider readily from *N. excisa*.

The colour of the palpi is the same as that of the legs.

The abdomen is oval, and projects a good deal over the base of the cephalothorax; it is of a sooty yellow-brown colour, marked with some transverse curved lines on the hinder part of the upperside (which are probably only visible in spirit of wine).

An adult male of this very distinct species was received from Dr. L. Koch, by whom it was found at Nuremberg.

Erigone (Neriene, Bl.) digitata, sp. n. (Plate LXVI. fig. 14.)

Male adult, length $\frac{1}{19}$ of an inch.

The whole of this Spider, except the legs and palpi, which are dull greenish yellow, is of a dull greenish sooty-black colour, the abdomen being darker than the rest and sparingly furnished with hairs.

The cephalothorax is elevated in front, the upper part of the caput being rounded, with a deep and conspicuous longitudinal indentation on either side a little below the summit; the caput is furnished with a few short bristly hairs; and the clypeus and eye area are bluff and rounded. The *eyes* are placed on the fore part of the caput, in a somewhat oval group, considerably below the summit, and a little below the midway point of the facial space: the height of the clypeus appeared to be slightly greater than half the facial space, and slightly less than the space from the hind central eyes to the summit of the caput; the hind central eyes are about level with the lateral indentations, and are separated from each other by about the length of an eye's diameter; and about the same distance below them is the fore central pair, the eyes of which are a little smaller and close together; those of the lateral pairs are placed obliquely, the hinder one of each being further from the hind central on its side than the hind centrals are from each other.

The *legs* are slender, and their relative length is 4, 1, 2, 3, those of the fourth pair being perceptibly the longest.

The *palpi* are rather suffused with a greenish sooty hue; the radial joint is stronger than the cubital, enlarged at its extremity, which is produced in front, towards the inner side, into a pointed finger-like apophysis; and towards the outer side is a much shorter but stronger apophysis, the extremity of which is squared off. These projections, and the adjacent portion of the joint, are of a reddish colour; the digital joint is small; the palpal organs are well developed and complex, with a small spiral black spine beneath their extremity.

The *falces* are rather long, but not very strong, sloping towards the extremity on the inner side (where there are a few fine sharp teeth), perpendicular, a little divergent when looked at from the front, and about equal in length to the height of the facial space.

A single example of this Spider was forwarded to me for examination by Dr. L. Koch, by whom it was found near Nuremberg. It is remarkable from its combining the characters of the *Neriene* and *Walckenaëra* groups in a form and degree that I have not before noticed, having the elevated caput of the latter and the eye-position of the former. In this respect it groups with *Neriene cornuta* and *N. bituberculata*; but the divided caput of these two species, as well as the forms of their palpi, distinguish them at a glance.

ERIGONE (WALCKENAËRA) KOCHII, sp. n. (Plate LXVI. fig. 15.)

Male adult, length $\frac{1}{9}$ of an inch.

This Spider, supposed by Dr. Koch to be *W. unicornis* (Cambr.), is certainly very nearly allied to it, and bears great resemblance to it in the peculiar character of the cephalic eminence; but it differs remarkably, both in the special form of that portion of its structure and in the form and structure of the palpi and palpal organs. In colour the two species are alike; but the present is rather the largest; the perpendicular eminence which issues from the middle of the space occupied by the eyes is much stronger and more conspicuous than in *W. unicornis*, but is (as in that species also) bifid or strongly notched at its extremity; the limbs of the bifid portion, however, are longer and more divergent; and consequently the notch is deeper and larger; near the base in front this projection is prominent, and has some short hairs on the prominent part; it is also placed rather further back upon the caput than in *W. unicornis*, being closer to the eyes of the hinder than to those of the foremost pair. Looked at from above, the extremity of each of the limbs of the bifid part is very shining and much resembling an eye.

The *palpi* differ remarkably in the structure of the radial joint from those of *W. unicornis*; it is very short, and very narrow at its junction with the cubital joint, whence it enlarges suddenly, and has two long, strong apophyses from its extremity, a little on the inner side; the outermost of these is rather the shortest, and is bifid at its extremity, one limb of the bifid part being longer than the other and of a deep black-brown colour, but not so strong; the other apophysis adheres more closely to the digital joint, and is pointed at its extremity, and gibbous on its outer and upper edge. The palpal organs are highly developed and complex, and have a black filiform spine coiled round their extremity on the outer side.

A single example of this interesting species was received for examination in 1868 from Dr. Koch, by whom it was found at Nuremberg, and after whom I have taken the liberty of naming it. Very lately (May 1872) I have received another example of it from Warsaw, where it was found by M. Taczanowski, "Conservateur" of the Zoological Museum at Warsaw, by whom it has been most obligingly submitted to my inspection, among many other rare and interesting forms of this genus.

ERIGONE (WALCKENAËRA) MONODON, sp. n. (Plate LXVI. fig. 16.)

Male adult, length $\frac{2}{3}$ of a line.

Cephalothorax dull yellow-brown; legs and palpi pale dull yellow, with a brownish tinge; abdomen black.

The upper part of the caput is elevated into a not very high conical eminence, which slopes all round gradually into the sides; the summit is furnished pretty thickly with hairs. The eyes are placed at the base of the cone, almost forming a ring round it; they are in four pairs; those of the foremost pair equally divide the height of the facial space, and are small and not quite contiguous to each other; those of each lateral pair are contiguous to each other and are the largest of the eight; each eye of the posterior pair is placed a little above and behind the hinder eye of the lateral pair on its side, the space between the posterior eyes being thus much greater than that between each and the lateral eye nearest to it. Legs moderately long, rather slender, and furnished with hairs only. The palpi are not very long; the radial joint is produced over the base of the digital into a broad, rather oblong, oval form, slightly emarginate at its fore extremity, the inner corner of this portion being produced into a sharp-pointed corneous spine, which bends round sharply outwards, and its prominent point extends beyond the outer corner of the emargination. The cubital joint has a single small tapering bristle at the edge of its fore extremity on the upperside, directed downwards; the digital joint is not very large, and of oval form; the palpal organs are neither very prominent nor complex.

An adult male of this very distinct little species was received from Dr. L. Koch, by whom several examples have been found in the neighbourhood of Nuremberg.

ERIGONE (WALCKENAËRA) SCURRILIS, sp. n. (Plate LXVI. fig. 17.)

Male adult, length $\frac{1}{14}$ of an inch.

The *cephalothorax* is large and bluff before; and the caput is elevated (principally on the occiput) into a considerable subconical eminence, which leans rather backwards; the profile line from the summit of this eminence to the fore central pair of eyes is sloping, and very slightly impressed below the middle; from this point to the margin of the clypeus it runs in a slightly convex form; the face and upper portion of the elevation is furnished with strong bristly black hairs, those nearest the summit spreading over the sides and behind, where several, stronger and longer than the rest, droop and fall backwards like a queue. The *eyes* are all very minute, and seated on black spots; those of the fore central pair are the smallest of the eight, and are placed a little below the commencement of the eminence on the caput; those of each lateral pair are seated obliquely and are in the same straight line as the fore centrals; above each lateral pair, and at about the same distance from them as they are on either side from the fore central pair, is placed one of the hinder pair of eyes; these are widely removed from each other, on the sides of the lower part of the subconical elevation of the caput, and, with the fore centrals, form as nearly as possible (when looked at from the front) an equilateral triangle.

The *palpi* are moderately long and strong; the cubital joint curves forwards, and has some coarsish dark hairs on its outer side; it is longer than the radial joint, and slightly clavate at its fore extremity: the radial, though shorter, is stronger than the cubital, and is a little produced at its fore extremity, where it terminates in two small reddish-brown prominent points, the outer one of these being the longest and strongest; this joint has also some longish coarse hairs near its base on the outer side; the digital joint is not large; and the palpal organs are well developed and rather complex, of a reddish-brown colour, and with a short, curved, black, corneous, spiny process at their extremity.

The *abdomen* is clothed rather more conspicuously with hairs than is usual with Spiders of this genus; but the form and structure of the legs, falces, maxillæ, and labium is of the ordinary character. The colour of the cephalothorax and other fore parts is, in the example described, of a pale yellowish white, the abdomen being of a pale dull sooty black; but as it had evidently not long effected its last change of skin, the paleness of colouring cannot be taken as a specific character.

The position of the eyes of the upper pair, with the form and clothing of the cephalic eminence and the structure of the palpi, make this species easily recognizable.

A single example was sent me for examination by Dr. L. Koch, by whom it was found near Nuremberg.

ERIGONE (WALCKENAËRA) SIMILIS, sp.n. (Plate LXVI. fig. 18.)

Male adult, length $\frac{1}{14}$ of an inch.

The fore part of this Spider is of a rich deep brown; the legs and palpi (except the digital joints) orange-coloured, and the abdomen dull greenish sooty black, with pale yellowish lines visible, probably only after immersion in spirit of wine. The upper part of the caput is elevated, and the clypeus bluff, rounded, and prominent; and a strong indentation, running backwards above and behind each lateral pair of eyes, divides the elevation of the caput laterally from the lower part, while a slight transverse groove divides it from the lower part in front; the clypeus and upper part of the caput is smooth and glossy, and rather paler than the rest, all of which is covered with minute punctures, as also is the sternum, on which, however, the punctures are of a coarser nature. The eyes are in the usual position—when looked at from the front, nearly a square, the upper side being rather shorter than the lower, the other sides intermediate in length between the two. The legs are moderately long and strong, and are furnished with hairs and a few fine erect bristles.

The *palpi* are moderate in length; the cubital joint is short; the radial is greatly produced at its upper extremity, covering the greater part of the digital joint; its exact form near the extremity was very difficult to be seen satisfactorily in the only example that has come under my notice; but it appeared to curve round from the inner to the outer side, and terminate in a sort of point, there being within the curvature a prominent pale and somewhat corneous projection;

the outer side of the produced part of the radial joint also has a blunt, angular, prominent point. The digital joint is not large; the palpal organs are rather complex, and have, among others, a strongish but short curved black spine near their extremity on the outer side.

The female resembled the male in the punctured thorax and sternum, and in colours; but the caput was less elevated; and the only example of this sex (♀) examined was rather smaller, though adult.

An adult male and female were received from Dr. L. Koch, by whom they were found near Nuremberg, Bavaria. It is very nearly allied to, but quite distinct from, *Walckenaëra latifrons* (Cambr.).

ERIGONE (WALCKENAËRA) PRÆGRACILIS, sp. n. (Plate LXVI. fig. 19.)

Male adult, length $\frac{1}{20}$ of an inch.

The whole of the fore part of this Spider (except the legs and palpi) is of a dark greenish black-brown colour, the falces being rather the palest and the sternum the darkest. The *legs* are rather long (their relative length 4, 1, 2, 3), and far slenderer than usual in this genus; they are of a pale yellow colour, and are furnished sparingly with short hairs; the abdomen is black.

The *cephalothorax* has the caput elevated; the elevation is (looked at in profile) sloping and flattish in front, and sloping but rounded behind; it is constricted on the sides, and has a deep longitudinal groove or excavation running backwards from each lateral pair of eyes and reaching to the occiput; the clypeus is rather prominent and rounded, and its height exceeds half that of the facial space.

The *eyes* are dark-coloured and difficult to be seen; the hind centrals are widish apart, and seated on the upper fore margin of the cephalic eminence; the fore centrals are the smallest and seated on a strong tubercle; those of each lateral pair are placed obliquely, the fore one slightly below the straight line of the fore centrals.

The *palpi* are slender: the cubital joint is short, but slightly longer than the radial; it is bent forwards (or downwards) and has a minute prominent point beneath its base, when looked at in profile. The fore extremity of the radial joint is produced into a long, rather narrow apophysis, which reaches obliquely over the digital joint, extending to half its length; it is bifid at its extremity; the outer or lower limb of the bifid part is much the longest, the other limb being a mere short, sharp, prominent point. From beneath the outer side of the radial apophysis there issues a strong reddish-coloured corneous process, whose somewhat pointed extremity curves upwards by the side of the bifid extremity of the apophysis; the radial joint is also slightly gibbous in front, towards the outer side; and the gibbous portion is furnished with a group of a few longish coarse hairs. The palpal organs are complex and prominent, and have a double, circularly curved, strongish black spine near their extremity.

The *sternum* is convex, but has a large, shallow, circular indentation forwards: possibly this may have been the result of injury.

A single example of this species was received for examination from Dr. L. Koch, by whom it was captured at Nuremberg. It is nearly allied to *W. picina* (Bl.), but differs in the structure of the palpi, as well as slightly in the form of the cephalothorax.

ERIGONE (WALCKENAËRA) SALTUENSIS, sp. n. (Plate LXVI. fig. 20.)

Male adult, length 1 line $=\frac{1}{12}$ of an inch; female adult, $\frac{1}{9}$ of an inch.

This species is closely allied to *Walckenaëra minima* (Cambr.) (*W. pusilla*, Westr.), but is larger, and, though resembling it a good deal in general appearance, differs in some well-marked characters.

The *cephalic eminence* is broad, but not very high. The transverse line of the summit (when looked at from the front) is slightly hollowed; it is also constricted laterally at its base, and has a well-marked longitudinal indentation, which runs backwards from each lateral pair of eyes, besides a considerable excavation on either side beneath the occiput. The clypeus is nearly perpendicular from a very little way below the fore central eyes; and its height is nearly two thirds of that of the facial space. The sloping and vertical space between and below the four central eyes is clothed with short, strong, divergent hairs.

The *eyes* of the hinder or upper pair occupy the fore corners of the cephalic eminence, and are thus very wide apart, as wide apart as, or even wider than, the two lateral pairs; these and the eyes of the hinder pair form a rectangle whose transverse diameter is nearly double that of its longitudinal one. The eyes of the fore central pair are the smallest of the eight, near together, and situated a very little above the straight line of the lateral pairs.

The *legs* of the fourth pair are perceptibly longer and slenderer than those of the first; their relative length is 4, 1, 2, 3; and their colour is a dull orange-yellow tinged with brown; they are furnished with hairs; and a short, erect, black, spiny bristle issues from near the centre, on the upperside, of the tibiæ of the fourth pair.

The *palpi* are strong; the cubital joint is clavate and rather gibbous on the upperside: the radial joint is shorter and less strong than the cubital, and has its upper extremity slightly produced; the produced part is emarginate at its extremity, and has a small tubercular prominence near its base, on the inner side; this production and prominence are of a deep red-brown colour, the rest of the joint being pale yellow-brown: the digital joint is rather large, and has a conical prominence at its base, on the inner side. The palpal organs are rather complex; they have a curved corneous process at their base near the extremity, on the outer side, of the radial joint, and a short, prominent, tapering black spine, curved in a somewhat circular form, at their outer extremity.

The *falces* are strong, straight, perpendicular, and equal in length to the height of the clypeus.

The colour of the cephalothorax is dark brown, mixed with blackish and tinged with yellow, the upper part of the cephalic eminence being paler than the rest. The falces, maxillæ, and labium are yellow-brown; and the sternum is suffused with black.

The abdomen is oval, moderately convex above, and sparingly clothed with hairs; its colour is black, mottled with pale whitish, and with some transverse angular lines on the hinder part of the upperside, near the centre of which is a rectangular figure formed by four depressed dots.

The female is much larger than the male, and has the caput distinctly elevated, though not to nearly so great an extent as that of the male; the lateral pairs of eyes also in the female are wider apart, in comparison with the eyes of the hinder pair, than those of the male; the form of the genital aperture is distinctively characteristic.

An adult male and female were received for examination from Dr. L. Koch, by whom they were captured near Nuremberg.

ERIGONE (WALCKENAËRA) CITO, sp. n. (Plate LXVI. fig. 21.)

Male adult, length $\frac{1}{17}$ of an inch; female adult, length $\frac{1}{13}$.

The *cephalothorax* is of a yellowish-green colour, with a sooty tinge, and narrowly margined with black; the *legs* are of a dull yellowish brown, as are also the palpi, falces, and maxillæ, the sternum and labium being more suffused with sooty brown. The colour of the abdomen is black-brown; it is also sparingly clothed with hairs, and somewhat rugulose.

The *caput* is elevated, the elevated portion being nearly the height of the clypeus, or about one third of the length of the cephalothorax; the upper part of the elevation is rounded, and (looked at in profile) a little receding; *i. e.* there is a strongish impression above the fore central pair of eyes; a patch between these eyes and those of the hind central pair (but nearer to the former) is thickly clothed with hairs, and there are a few short but prominent hairs on the occiput; just above and behind each lateral pair of eyes is a deep circular pit or depression, which has a white shining appearance, something like an eye, and around and behind these pits the surface is indented, the indentation running backwards, in a pointed form, to the occiput.

The *eyes* are placed on small black spots; the fore lateral are in a straight line with those of the fore central pair; those of the hind central (or upper) pair are rather wide apart, and just beneath the fore margin of the elevation; those of each lateral pair are placed obliquely on small tubercles; the fore centrals, which are contiguous to each other, are very small and difficult to be seen, and each of these is rather more than an eye's diameter from the fore lateral eye on its side. The *clypeus* is rather prominent, bluff, and rounded, and its height is nearly equal to half that of the facial space.

The *legs* are moderate in length and strength, as also are the *palpi*, whose cubital joints are rather clavate and bent, and much longer than the radials; these are short and prolonged at their fore extremity into two apophyses: one, rather on the inner side is long, tapering, pointed, and slightly curved outwards; the other (towards the outer side) is shorter, and terminates in a sharp black spiny point, with a small tubercle near its base. The digital joint is of moderate size and ordinary form; the palpal organs are prominent and complex, with a small, slender, coiled black spine at their extremity. The *falces* are small, straight, and a little inclined backwards to the maxillæ, which, together with the labium and sternum, are of ordinary character.

The female resembles the male in colour, but is larger and devoid of the elevation of the caput; the form of the genital aperture is characteristic, but easier to be seen in the figure than to be made out from a description.

An adult example of each sex was received for examination from Dr. Koch, by whom they were captured near Nuremberg. It is allied to *Walckenaëra nemoralis* (Bl.), *W. implana* (Cambr.), and *Erigone blackwallii* (Cambr.), but may easily be distinguished by the form and structure of the palpi and other characters.

ERIGONE (WALCKENAËRA) BLACKWALLII, sp. n. (Plate LXVI. fig. 22.)

Male adult, length $\frac{3}{4}$ of a line.

The *cephalothorax*, which is smooth and glossy, is large and elevated in front, rather flattened behind, and impressed laterally behind the lateral pairs of eyes; clypeus bluff and rounded, and its height is equal to (if it does not exceed) half that of the facial space; the space between the fore and hind central pairs of eyes is impressed, when looked at in profile; and the lower part of this space is clothed with hairs. The eyes are in the ordinary position; and immediately behind and above each lateral pair is a strong, somewhat circular pit or indentation. The general area occupied by the eyes is broader than long; *i. e.* the interval between the foremost eyes of the lateral pairs is greater than that between each of these and that of the upper pair on its side. The falces are not very large; they are placed considerably back, beneath the clypeus, and are inclined towards the sternum. The colour of the cephalothorax and falces is dark brown, with a yellowish tinge. *Legs* dull orange-yellow, rather short and moderately strong, furnished with hairs only. *Palpi* moderately long, strong, similar in colour to the legs, except the digital joint, which is deep brown. The cubital joint is much stronger than the radial; this last is very short, and has its inner extremity prolonged into a longish, slightly tapering, pointed, curved apophysis, the point directed outwards; on the outer extremity, towards the underside, is another, small, sharp-pointed, corneous apophysis, its extreme point being bent outwards. The digital joint is large and of an oval form; the palpal organs are well developed, but not very complex, with several corneous prominences and spines, a small circularly curved one of which latter is at their fore extremity. The *abdomen* is large, somewhat flattened, and projects considerably over the base of the cephalothorax; the greater part of its upperside is covered by a sort of coriaceous shield or separate integument similar to that in *W. nemoralis* (Bl.), to which species it is nearly allied; this shield is covered with minute punctures; four more conspicuous punctures form a quadrangle on the centre, and a few short hairs are distributed over its surface. Its colour is deep brown above, of a somewhat bistre brown tint, the underside being blackish.

The female is rather larger than the male, but resembles it in colours, except that the abdomen is blacker; the cephalothorax is gibbous above in front, but, like all others in this genus, nothing like as elevated as in the male, though preserving its general characters; the form of the genital aperture is characteristic.

Adults of both sexes were received from Dr. Ludwig Koch, by whom they were captured near Nuremberg, in Bavaria. In accordance with Dr. Koch's wish, I have here (as in other instances) retained the name conferred upon this species, in compliment to Mr. Blackwall, by Dr. Koch in his MS. notes.

Erigone (Walckenaëra) elegans, sp. n. (Plate LXVI. fig. 23.)

Male adult, length $\frac{3}{4}$ of a line, or $\frac{1}{16}$ of an inch.

Cephalothorax deep brown, approaching to black; the fore part bluff, rounded, and massive, with a distinct but not very large oval eminence on the upperside of the caput. The normal indentations are very strongly marked; and the lateral margins are depressed; these are all also otherwise indicated by blackish lines. The *eyes* are in the ordinary position: two are situated on the fore part of the upper side of the eminence on the caput; below each of these is a lateral pair, the eyes of which are contiguous and seated just below the junctional groove or impression between the eminence and the lower segment of the caput; those of the fore central pair are minute, contiguous, and nearly in a straight line with those of the lateral pairs: a strong elongated indentation runs backwards from just above and behind each lateral pair of eyes; and the height of the clypeus appeared to be slightly greater than one half of that of the facial space.

The *legs* are rather long, moderately strong, and of a pale yellow colour; they are furnished only with hairs.

The *palpi* are short, similar in colour to the legs, except the digital joints, which are dark brown; the radial is much stronger than the cubital joint, and, looked at from above and behind, is of a somewhat crescent-form, with a small black, sharp-pointed, tooth-like prominence in the centre of the hollow side, directed sharply inwards, between the horns of the crescent; this tooth-like prominence appeared to terminate with a pointed spiny bristle. The digital joint is moderate in size and of a short oval form, with apparently one or two subangular prominences near its base. The palpal organs are rather complex; on their outer side is a rather long, strongish, circularly curved black spine. The *falces* are short, strong, subconical, and directed backwards beneath the clypeus. The *abdomen* is oval, and projects a good deal over the base of the cephalothorax; its colour is jet-black.

An adult male was received from Dr. L. Koch, by whom it was captured near Nuremberg, Bavaria.

Erigone (Walckenaëra) alpina, sp.n. (Plate LXVI. fig. 24.)

Male adult, length $\frac{1}{11}$ of an inch.

This species, which has the fore part of the cephalothorax divided into two segments, is allied to *W. cristata* (Bl.) and *W. latifrons* (Cambr.); but it may be easily distinguished by its larger size and the much larger proportion that the hinder segment of the cephalic eminence bears to the fore one. In this respect there is a great resemblance to *Erigone cucullata* (Koch); from this, however, it is easy to separate it, as the hinder segment in *E. cucullata* projects far more forwards than that in the present species.

The colour of the cephalothorax is dark yellow-brown, that of the abdomen (which is large, oval, and very convex above) being of a dull black colour, clothed with hairs. The legs and palpi are pale yellow, except the radial and digital joints of the latter, which are dark brown.

The hinder segment of the caput is large and rounded at its summit, the occipital line (in profile) a little sloping, the frontal line more vertical; the fore segment is not one third as strong as the hinder one, and it is a little prominent; its summit, as well as the upper fore margin of the hinder segment, is furnished thickly with strong hairs, which meet over the cleft between the two segments; this cleft is (when looked at in profile) equal in width to the breadth of the fore segment, but is wider at the top than at the base.

The *eyes* are placed in the usual four pairs: those of one pair, on the summit of the hinder segment, are wide apart; those of another pair, on the upper fore margin of the foremost segment, are dark-coloured and difficult to see; those of each lateral pair are contiguous to each other, and seated just below the base of the cleft on either side; behind each lateral pair is a large, longitudinal, somewhat oval excavation; and at its larger end (near the eyes) is a circular shining pit or depression.

The *palpi* are of ordinary length and strength: the cubital joint curves forwards; it is long and much enlarged (or clavate) at its fore extremity, near which, on the upperside, is a short, strong, black bristle; the radial joint is short, prominent behind, and produced in front into a large somewhat oblong apophysis with a sharply curved corneous-looking point issuing from its inner extremity and reaching to its outer one, between which and the base of this curved point is a somewhat circular excavation or emargination; this apophysis covers a considerable portion of the outer surface of the digital joint; and the outer surface of the two digitals are turned towards each other: the palpal organs are prominent and complex, with corneous spines, processes, and transparent membrane.

The *falces* are equal in length to the height of the clypeus; they are strong, straight, and with some fine teeth towards their extremities on the inner sides.

A single example of this Spider was found by myself high up on one of the mountains near Bruck-am-Muir, in Styria, in June 1865; and I have since received another for examination from Dr. Ludwig

Koch, by whom it was captured in the Tyrolese Alps, at an elevation of 6000 feet.

LIST OF SPECIES, WITH REFERENCES TO PAGE, PLATE, AND LOCALITY.

Erigone arictans, p. 748, Plate LXV. fig. 1. Nuremberg.
—— *incomta*, p. 748, Plate LXV. fig. 2. Nuremberg.
—— *forensis*, p. 749, Plate LXV. fig. 3. Rome.
—— *prominula*, p. 750, Plate LXV. fig. 4. Nuremberg and England.
—— *inconspicua*, p. 751, Plate LXV. fig. 5. Nuremberg.
—— *romana*, p. 752, Plate LXV. fig. 6. Rome.
—— *sila*, p. 753, Plate LXV. fig. 7. Nuremberg.
—— *pallens*, p. 753, Plate LXV. fig. 8. Nuremberg.
—— *biscissa*, p. 754, Plate LXV. fig. 9. Bayreuth (Bavaria).
—— *græca*, p. 755, Plate LXV. fig. 10. Corfu.
—— *alexandrina*, p. 755, Plate LXV. fig. 11. Alexandria (Egypt).
—— *simonii*, p. 756, Plate LXV. fig. 12. Paris and Nuremberg.
—— *sarcinata*, p. 757, Plate LXV. fig. 13. Nuremberg.
—— *digitata*, p. 758, Plate LXVI. fig. 14. Nuremberg.
—— *kochii*, p. 759, Plate LXVI. fig. 15. Nuremberg and Warsaw.
—— *monodon*, p. 759, Plate LXVI. fig. 16. Nuremberg.
—— *scurrilis*, p. 760, Plate LXVI. fig. 17. Nuremberg.
—— *similis*, p. 761, Plate LXVI. fig. 18. Nuremberg.
—— *prægracilis*, p. 762, Plate LXVI. fig. 19. Nuremberg.
—— *saltuensis*, p. 763, Plate LXVI. fig. 20. Nuremberg.
—— *cito*, p. 764, Plate LXVI. fig. 21. Nuremberg.
—— *blackwallii*, p. 765, Plate LXVI. fig. 22. Nuremberg.
—— *elegans*, p. 766, Plate LXVI. fig. 23. Nuremberg.
—— *alpina*, p. 767, Plate LXVI. fig. 24. Bruck-am-Muir, Styria, and the Tyrol.

EXPLANATION OF THE PLATES.

Plate LXV.

Fig. 1. *Erigone arictans.*
a, cephalothorax, in profile; *b*, left palpus, from inner side.

2. *Erigone incomta.*
a, cephalothorax, in profile; *b*, cephalothorax and falces, from the front; *c*, *d*, left palpus in two positions.

3. *Erigone forensis.*
a, cephalothorax and abdomen, in profile; *b*, ditto, from the front; *c*, abdomen (♀), in profile; *d*, genital aperture (♀); *e*, left palpus (♂), from outer side; *f*, radial and cubital joints of right palpus (♂).

4. *Erigone prominula.*
a, cephalothorax, in profile; *b*, eyes, from the front; *c*, *d*, *e*, portions of palpi in different positions.

5. *Erigone inconspicua.*
a, abdomen, in profile; *b*, ditto, from the front; *c*, *d*, left palpus in two positions.

6. *Erigone romana.*
a, cephalothorax and abdomen (♂), in profile; *b*, abdomen (♀), in profile; *c*, genital aperture (♀); *d*, left palpus (♂), from outer side.

7. *Erigone sila.*
a, cephalothorax and abdomen; *b*, caput, from above and behind; *d*, ditto, from the front; *e*, *f*, left palpus in two positions; *c*, portion of right palpus, in profile.

8. *Erigone pallens.*
a, cephalothorax and abdomen, in profile; *b*, caput, from the front; *c*, right palpus, from outer side; *d*, portion of left palpus, in profile.

Fig. 9. *Erigone biscissa.*
a, cephalothorax and abdomen, in profile; *b*, caput, from the front; *c*, left palpus, from outer side in front; *d, e*, portions of ditto in two positions, from behind.
10. *Erigone græca.*
a, cephalothorax and abdomen, in profile; *b*, left palpus.
11. *Erigone alexandrina.*
a, cephalothorax and abdomen (♂), in profile; *b*, caput (♂), from the front; *c*, right palpus (♂), from the front; *d*, genital aperture (♀).
12. *Erigone simonii.*
a, cephalothorax and abdomen (♂), in profile; *b*, caput (♂), from the front; *c*, left palpus, from outer side; *d*, right palpus, from inner side.
13. *Erigone sarcinata.*
a, cephalothorax and abdomen, in profile; *b*, cephalothorax, from above and behind; *c*, ditto, from the front; *d*, left palpus.

PLATE LXVI.

14. *Erigone digitata.*
a, cephalothorax, in profile; *b*, caput, from the front; *c*, eyes, from the front; *d*, cubital and radial joints of left palpus, from above and behind; *e*, ditto of right palpus.
15. *Erigone kochii.*
a, b, cephalothorax, in profile; *c*, caput, from the front; *d*, cephalothorax, from above and behind; *e*, right palpus; *f*, left ditto.
16. *Erigone monodon.*
a, cephalothorax and abdomen, in profile; *b*, caput, from the front; *c*, right palpus, from above and behind.
17. *Erigone scurrilis.*
a, cephalothorax and abdomen, in profile; *b*, left palpus; *c*, cubital and radial joints of right ditto; *d*, caput, from the front.
18. *Erigone similis.*
a, cephalothorax and abdomen (♂), in profile; *b*, cephalothorax (*id.*), from the front; *c, d, e*, palpi (♂) in different positions; *e*, genital aperture (♀).
19. *Erigone prægracilis.*
a, cephalothorax and abdomen, in profile; *b*, caput, from the front; *c*, right palpus; *d*, left ditto; *e*, portion of right ditto; *f*, cubital joint of palpus.
20. *Erigone saltuensis.*
a, cephalothorax and abdomen (♂), in profile; *b*, ditto (♀); *c*, caput, from the front; *d*, palpus (♂); *e, f*, genital aperture (♀).
21. *Erigone cito.*
a, cephalothorax and abdomen (♂), in profile; *b*, caput, from the front; *c, d, e*, portions of left palpus (♂) in different positions; *f*, genital aperture (♀).
22. *Erigone blackwallii.*
a, cephalothorax and abdomen (♂), in profile; *b*, caput (*id.*), from the front; *c, d, e*, left palpus (♂) in different positions; *f*, genital aperture (♀).
23. *Erigone elegans.*
a, cephalothorax and abdomen, in profile; *b*, caput, from the front; *c*, ditto, above and behind; *d*, left palpus, from outer side; *e*, right ditto, above and behind.
24. *Erigone alpina.*
a, cephalothorax, in profile; *b*, ditto, from the front; *c, d*, portions of left palpus in different positions.

6. Observations on the Macaques.—II. Bélanger's Monkey.

By Dr. JAMES MURIE, F.L.S., F.G.S., &c.

[Received May 29, 1872.]

MACACUS ARCTOIDES, Is. Geoff.

Macacus arctoides, Is. Geoff. St.-Hilaire, Zool. de Voy. de Bélanger, 1830; Mag. de Zool. 1833, pl. i., and Cat. Mus. Hist. Nat. Paris, 1851, p. 31; Chenu, Encycl. d'Hist. Nat. p. 148, fig. 118.

Pithecus arctoides, De Blainville, Ostéographie, Atlas, ii. pl. vii. figs. 1, 2, 3.

Macacus arctoides, Gerrard, B. M. Cat. of the Bones of Mammalia, 1862, p. 16.

Macacus melanotus, Gray, B. M. Cat. of Monkeys, Lemurs, and Fruit-eating Bats, 1870, p. 29.

Macacus brunneus, Anderson, P. Z. S. 1871, p. 628.

In a communication to this Society, Dr. J. Anderson, the active Superintendent of the Indian Museum at Calcutta, gave the diagnosis and a short description of a male Monkey from Bhamô, in Upper Burmah, which he believed to be new to science. He designated it the Brown Monkey, *Macacus brunneus*.

A second notice followed on its external characters and anatomy, and was read on the 6th of February last. This referred more particularly to a young male from Cachar, where it is said they are not common. Mr. Jamrach, I believe, brought over some live specimens; and at present there are one male and two females exhibited in the Gardens.

Thoroughly interested in Dr. Anderson's first letter, I was still more so in his second notice; for I surmised he had come across a rare although already known species, and I was partially prepared for his mention of certain peculiarities in its anatomy.

On a recent visit to the Society's Monkey-house I examined carefully all three specimens answering to the labels *Macacus brunneus*, and therefrom recognized, as I had anticipated, a species originally described and figured by Is. Geoff. St.-Hilaire.

A male, the type of the species *, was first transmitted to the Musée d'Hist. Naturelle at Paris by M. Diard (1822), who obtained it in Cochin-China. Another specimen, also from Cochin-China, formed part of the collection of one of the French voyageurs, and was formally described but not figured by Is. Geoffroy, "dans la Zoologie du Voyage de M. Bélanger, 1830." Again, under the same name, Macaque ursin (*Macacus arctoides*), the above-named writer gave some remarks and a coloured figure of it in Guérin's Mag. de Zool. 1833, pl. i.

M. St.-Hilaire clearly defines it from the Red-faced Monkey and the "Macaque de l'Inde." He observes in the catalogue :—"Espèce très-distincte de la précédente [*M. speciosus*] par ses longs poils plusieurs fois annelés de brun et de roux-clair, par l'extrême brièveté de sa queue," &c.

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* *Vide* Mag. de Zool. and Cat. Mus. Hist. Nat. Paris, as above referred to.

Dr. Anderson's recent articles, then, as I infer, contain an elaborate justification of the exterior characters, dental and osteological points, of Geoffroy's species, amplified by what is patent in the Society's living specimens. I am compelled, therefore, to sink *M. brunneus* as a synonym.

It behoves me to remark that Dr. Anderson's two papers otherwise are most useful. They prove that the geographical distribution of this Monkey is wider than might have been anticipated.

His anatomical notes include descriptions of the tongue, hyoid pouch, and internal viscera, all good in their way. Other data also hitherto unrecorded are on the male generative organs and the tail-structures. The peculiar form of the penis, and the fact of its containing a fair-sized bone, are not essentially restricted to this species. As I shall show in another paper, the Japanese Monkey (or Brilliant Macaque), *M. speciosus*, a form closely allied to the *M. arctoides*, has male organs almost identical in pattern. As to the terminal vertebræ of the tail, and the habit of its sitting on the latter appendage, I leave my comparisons and remarks till treating of the *M. speciosus*. I am not prepared, however, to accept *in toto* his explanation, or Lord Monboddo's theory.

Seeing that the common name of Brown Monkey is no longer applicable, and the original appellation of St.-Hilaire, "Macaque ursin," anglicized into Bear Macaque, is in a measure defective, I propose another cognomen, viz. that of Bélanger's Monkey.

7. Observations on the Macaques.—III. The Formosan or Round-faced Monkey. By Dr. James Murie, F.L.S., F.G.S., &c.

[Received June 4, 1872.]

Mr. Swinhoe of late years has done much towards the elucidation of the Chinese fauna; and this Society has on many occasions been indebted to him for rare live specimens. Among others of interest was the How-tsze, or Kaou, a Formosan Rhesus-like Monkey, described and figured by him (P. Z. S. 1862, p. 353, pl. xiii.) under the title of *Macacus cyclopis*.

The native names given by Mr. Swinhoe recall to me two articles, "On the Monkeys known to the Chinese, from the Native Authorities," by Mr. Samuel Birch, of the British Museum, and published in 'Charlesworth's Magazine' for 1839-40*. The articles refer to some of the old pictorial encyclopædias of the Chinese; and, as Mr. Birch observes, "the fabulous and the true, imagination and observation, are alike blended in a disorder startling to a European eye"†.

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* Mag. of Nat. Hist. vol. iii. new ser. 1839, p. 587, and vol. iv. p. 35.

† Ibid. vol. iii. p. 592.

Whether any of the undermentioned really allude to Mr. Swinhoe's animals I know not; but the description is so droll as to be worth quoting as a footnote*.

In the recent B. M. Catalogue†, Dr. Gray ambiguously places *M. cyclopis* under *M. rhesus*, again adding it as a separate species in the Appendix ‡.

Dr. Sclater § once suggested that good points of distinction might present themselves when the specimen was more narrowly examined, but lately ‖ quite discards such a notion. Commenting on the *M. lasiotis* as a Rhesus with its tail chopped off, he observes, respecting Mr. Swinhoe's Chinese Monkeys, *M. cyclopis*, *Inuus sancti-johannis*, and *M. rhesus*, from Hainan:—"My own opinion is, that none of these supposed species, any more than *M. lasiotis*, are yet proved to be really well established as specifically distinct from *M. rhesus*."

My examination of the skeletons of the type specimens of *M. cyclopis* enables me to demonstrate characters certainly differing from those of the ordinary Rhesus Monkey.

Of the two animals which lived in the Gardens, it was observed that when the female arrived at maturity, the callosities and the region generally at the root of the tail became extremely developed. Indeed, at certain times, the buttocks &c. acquired such hideous proportions, that it was necessary, for decency's sake, to remove her from the public gaze. When this unlooked-for phenomenon, equivalent to menstruation in the human being, first occurred, my attention was called to the fact by the keeper. Sure enough it was a most extraordinary sight. In the female Rhesus Monkeys and the Baboons, at stated periods the hinder parts become unusually florid and puffy, but generally speaking the tumidity is restricted within reasonable bounds. In the case of the Round-faced Monkey, however, not only are the callosities and external genitalia swollen, but even the proximal end of the tail is inordinately increased in dimensions. In short, the whole of the posterior parts are literally a mass of deformity. The skin and subcutaneous tissues are frightfully distended, purple, deep red, and roseate, and here and there bagged out in great folds as if they were ready to burst from sanguineous and serous effusion. It is a hideous spectacle! A woodcut representing such condition of the parts has been given in our 'Proceedings' for 1864, p. 711, which, though to some extent true to nature, fails to give a vivid conception of this most exuberant sexual development.

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* The Hwatso is a fabulous animal, and consequently an object of superstition. "In the Yaoukwang hills are animals whose exterior appearance is like a Mehow, with human face and hog's bristles. During the winter they dwell in caves." [Mr. Swinhoe notes that *Macacus cyclopis* "seems to be quite a rock-loving animal, seeking the shelter of caves during the greater part of the day."] "They are called Hwatso; their cry is like cut water; and when seen they are ominous of a conscription. The 'cut water' probably refers to the noise of a mill. The expression 'yaou yih' in the text appears to imply the power that the Chinese, in common with other despotic Asiatic governments, have of forcing people to work for them. Yih is literally 'police runners to send out,' &c."

"The Yew are like the Mehow, and of a deep yellow and black colour; their tails are several cubits long, like an Otter's, but have no tufts. When they scent the dew ascending to form rain, they then suspend themselves from a tree by means of their tails, to fill their nostrils with it, or else by both feet. In Keantung they call them carriers, Wuhkëen."—p. 38.

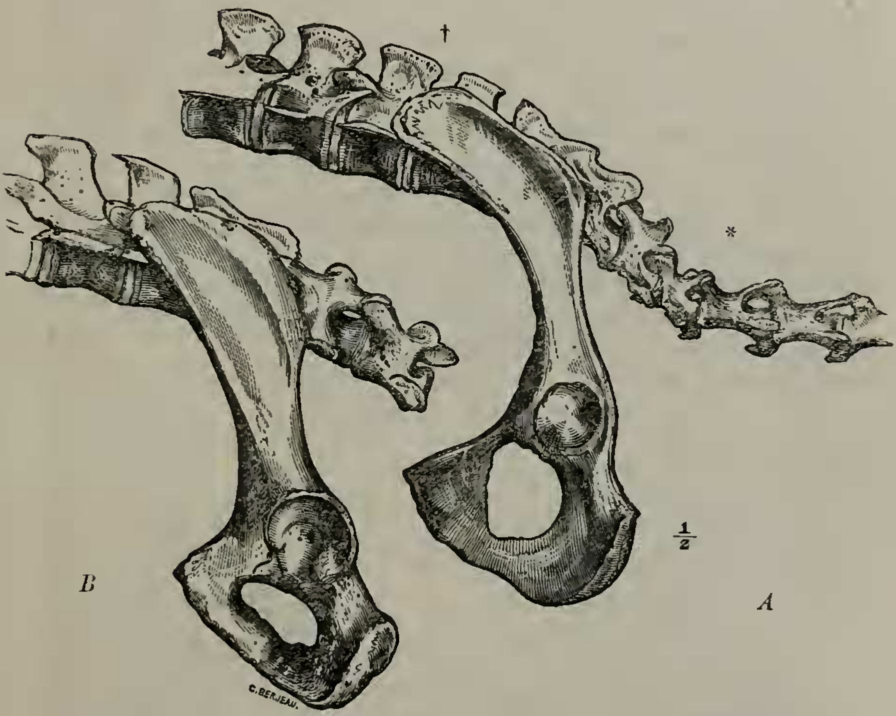
"The Gaou are said to inhabit the Lunseen hills, to be like an ape, with long arms, to be good for killing, and called Gaou."—p. 34. "The Yuen's arms, when cut through at the thick part, can be made into flutes rounder than reeds. They are of the Monkey tribe, having long legs, and are good whistlers, given to dragging things about, whence their name is derived from the character 'yuen,' to drag or lead."—p. 36.

"The Jen are like the common Monkey (how), with green body and dark jaws; they have black whiskers; their paws are also black. They are naturally very fond of their whiskers, and dote on their species, living and dying together; on which account, if one can be got at, a hundred may be killed. Men shoot them with poisoned arrows; the shot animal's companions draw out the arrow in order to wound themselves, and die with one another." They are also called Kwojen. (*Vide* Morrison, 'Dict. Chin. and Engl.' part ii. vol. i. p. 321, 4to, Macao.)—*Ibid.* Birch, 1840, p. 36.

† Of Monkeys, Lemurs, and Fruit-eating Bats, 1870, p. 31.

‡ Ibid. p. 128. § P. Z. S. 1864, p. 710. ‖ P. Z. S. 1871, p. 222.

Fig. 1.



Side view of pelvis and part of spinal column of the ♀ and ♂ *Macacus cyclopis*, showing their remarkable pelvic angle, as compared with *M. erythræus*. See also fig. 1, p. 724, of *M. maurus*, and fig. 1, p. 782, of *M. speciosus*.

A. Female, the asterisk (*) pointing to alteration in the direction of the tail, between the first and second caudal vertebræ, the dagger (†) to the spine of the seventh lumbar. *B*. Male, with less curvature of the parts.

One is prepared to perceive that the immense dilatation of the buttocks almost necessitates an adaptation of the ischial bones, other than what obtains in the common Rhesus. As the illustrations show, the above apparently temporary change in the posterior soft parts of the Formosan Monkey is actually correlated with osteological structure of an aberrant kind.

In this latter species I find that the pelvic bones have a most unusual curvature in their long axis, certainly very different from the Rhesus and other Macaques. The ilium anteriorly overrides the sacrum far more than is ordinarily the case. Its upper surface is markedly concave transversely, but longitudinally is strongly convex. The inferior or inner face has an outer sulcus, which, reversely, is a prominence in the Rhesus and other species of the genus. The ischial tuberosities are remarkably truncate and pedate. The subpubic angle is short, narrow, and the thyroid foramen large. The brim of the pelvis is of an egg-shaped contour; but the posterior aperture has a figure-of-8 or hour-glass outline, from a more than ordinary inward prominence of the bones opposite the acetabulum. The special feature, however, is the thrusting forwards of the pubes, and partly the ischia, leaving a wide interval, therefore, between the buttocks and tail. Their sacro-vertebral angle pretty well agrees with that of a Rhesus, which I compared side by side; but the pelvic angles diverge considerably. In the Rhesus the vertebro-iliac angle is 165°; in the ♀ Formosan 110°, in the ♂ 125°. The ilio-pubic angle of the Rhesus is 105°; of the ♂ and ♀ Formosan 95°. My figures of the pelvic bones of the latter animals, if compared with those I have given of the Bornean and Japanese Monkeys, convey through the eye the distinctions better than numerical data.

I shall only add a few pelvic measurements of *Macacus cyclopis* accessory to the foregoing:—

	Female. in.	Male. in.
Extreme length of the os innominatum	4·6	5·1
Conjugate diameter of the pelvis	2·3	2·15
Transverse diameter of the same	1·6	1·65
Its oblique diameter	2·5	2·2

My statements may be objected to on the ground that a softening of the bones or other diseased condition is the cause of the abnormality from the Rhesus type. It is as well, then, that I should mention that in the female specimen the whole of the skeletal structure is solid, and exhibits no signs of *mollities ossium*. Furthermore, in it the departure from the normal configuration of the Rhesus is most evident. The long bones of the male skeleton, it is true, are more than usually porous and soft; the pelvis, though, is sounder, but not so firm as to be consistent with robust health. But this very fact supports the idea of the pelvic differentiation being a specific mark, and not due to disease; for in the latter, where possibly subject to imperfect ossification, the curvilinear figure presently to be spoken of is less notable.

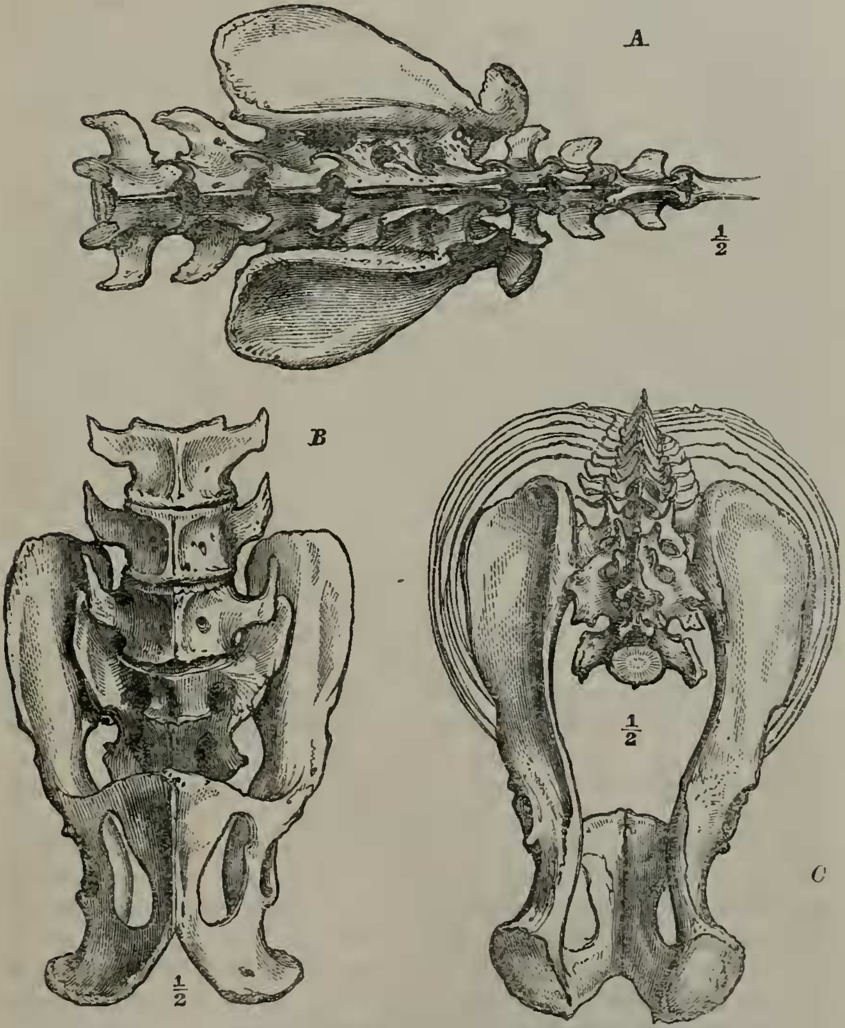
The general character of the spinal column in this case is better seen in the ♀ specimen than in the ♂, simply because it has been retained as a ligamentous skeleton.

In the former there are 7 cervical, 12 dorsal, 7 lumbar, 3 sacral, and 16 caudal—in all, therefore, 45 vertebræ. The latter appears to have the same numbers; but injury to the final caudals prevents me speaking with positiveness.

The neck-, back-, and loin-vertebræ have no special attributes further than that those of the loins posteriorly manifest increment of strength.

The three sacral vertebræ have coalesced; and their inferior surfaces, as a whole, possess greater concavity than in the Rhesus, where flatness is predominant. The most marked feature of the sacrum of

Fig. 2.



Different views of the ♀ pelvis &c. of the same Chinese animal.
A. As seen dorsally and nearly vertically. *B.* Inferiorly, with a posterior inclination. *C.* From behind, the tail being removed.